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(54) Structural member

(57) A structural member for a fence post or panel, the structural member comprising: a hollow outer member; and at least one rod retained within the outer member, the rod being biassed, such that, if the rod is cut, the cut pieces of the rod are urged towards each other so as to hinder further cutting.

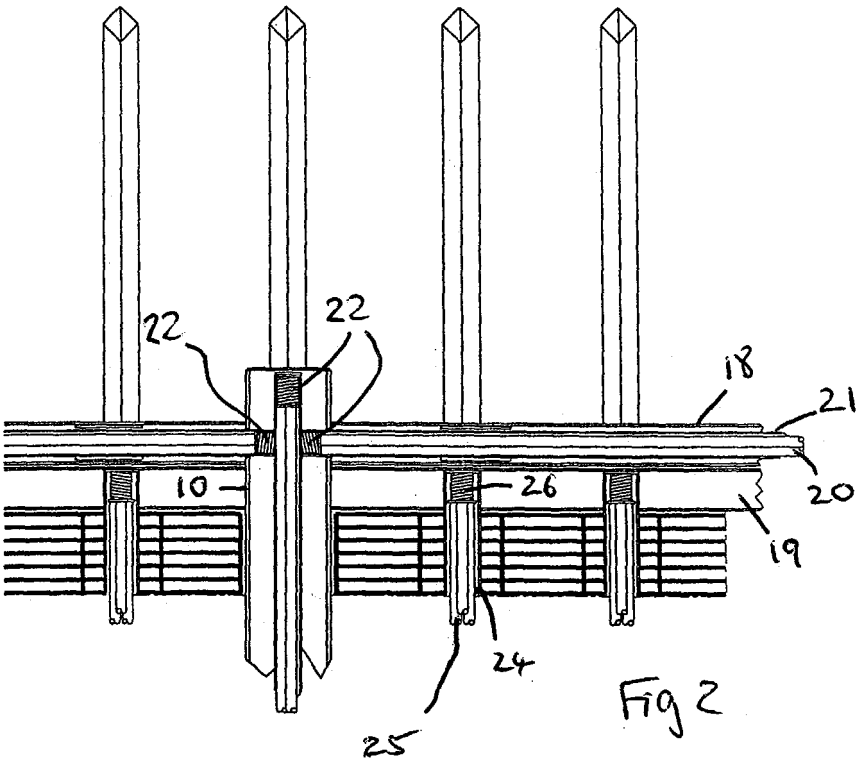


Fig 2

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Description

[0001] This invention relates to a structural member and, in particular, to a structural member which may be used in or as a fence post or as part of a fence panel.

[0002] It is well known to construct barriers, fences, gates and the like by inserting a plurality of posts into the ground or associated bases and mounting, between the posts, some form of barrier, typically constructed from a plurality of horizontal rails and vertical pales. The barrier is typically used to define a boundary around a controlled region into which access is to be restricted.

[0003] The posts, rails and pales are typically formed from wood or hollow metal section and, as such, can be cut by using an appropriate cutting tool. However, as the purpose of the barriers is to prevent unwanted persons crossing over the barrier into the controlled area, the provision of structural elements within the barrier which can be relatively easily cut, so as to permit entry into the controlled area, is a potential security hazard.

[0004] As such, the present invention aims to provide a structural element which can be utilised in a device such as a fence, barrier, security gate or the like which overcomes the problem noted above.

[0005] The present invention provides a structural member for a fence post or panel, the structural member comprising:

a hollow outer member; and
at least one rod retained within the outer member, the rod being biassed, such that, if the rod is cut, the cut pieces of the rod are urged towards each other so as to hinder further cutting.

[0006] In this way, the present invention provides a structural member which, when under the action of cutting the rod, causes the cutting disk or saw to be pinched by the rod as the cutting continues, thereby making further cutting considerably harder.

[0007] In a preferred embodiment, the present invention includes a plurality of rods retained within the outer member, each rod being biassed as described above. This embodiment is particularly advantageous as, if one rod happens to be cut, the cut portions of that rod are urged towards each other, reducing the gap between the rod portions, so as to increase the friction on the cutting element thereby hindering further cutting. The remaining uncut rods substantially maintain the structural integrity of the structural member until repairs can be carried out.

[0008] Preferably, the rod(s) is (are) biassed by means of one or more springs which may be provided at any suitable location within the hollow outer member, but preferably at least one spring is provided at at least one end of the hollow outer member. Such an arrangement has the further advantage that the spring(s) or other biassing mean(s) can be located in a portion of a fence post which is inserted into the ground or may be located in a position within a pale or rail which is, itself, retained within a further element such as the post, rail or pale, thereby protecting the springs from being cut.

[0009] The hollow outer member is preferably formed from steel, but could be formed from any other suitable metallic or non-metallic material. The outer member may be formed from square, circular or any other suitable shaped cross-section tubing.

[0010] The rod (s) may be formed from a non-ferrous material as this type of material, in particular aluminium, provides a far better binding effect on a cutting disk. However, the rods may be alternatively formed from steel or other suitable metal.

[0011] The present invention also provides a fence panel and a fence post including a structural member as described above.

[0012] Examples of the present invention will now be described with reference to the accompanying drawings, in which;

Figures 1 a and 1b show an elevation and side view of a fence panel incorporating structural members according to the present invention;
Figure 2 shows detailed views of the connection between the upper rail and the fence post and vertical pales;
Figure 3 shows a cross-sectional side view through a vertical pale; and
Figure 4 shows a detailed elevational view of the connection of the lower horizontal rail with a fence post.

[0013] One example of the present invention is shown in Figures 1 a and 1 b in which a plurality of substantially vertical posts 10 are inserted into the ground 11. Adjacent posts 10 are joined by upper 12 and lower 13 rails, the rails having a plurality of pales 14 mounted thereon, in this example substantially perpendicular to the rails, although this is not essential. The pales 14 in this example extend into the ground 11, but they may end before the ground in other examples. The pales include an upper portion 15 above the upper rail 12 and a main portion 16.

[0014] The upper portions 15 of the pales 14 extend above the upper horizontal rail 12 to provide additional height to the fence created by the posts 10, rails 12 and pales 14. The upper portions 15 of the pales 14 are, in this example, shaped to extend at an angle from the vertical, in section 16, thereby making it more difficult to climb over the fence.

[0015] In Figures 2 and 3, the connection of the upper rail 12 to an upper portion of a fence post 10 is shown. In addition, the connection of the upper part of main portions 16 of the pales 14 with the upper rail 12 are shown. The upper rail 12 is formed from an upper portion 18 and a lower portion 19. In the upper portion 18, a plurality of substantially circular cross-section rods 20 are provided and extend from one fence post 10 to an adjacent fence post (not shown). The rods 20 are housed in a hollow outer member 21 and the outer member 21 extends into

the fence panel 10. At the end of the outer member 21 in the fence post 10, a spring 22 is provided to urge the rods 20 away from that end of the hollow member 21. A corresponding spring is advantageously provided at the other end of the same hollow member 21 to produce the same effect. By ensuring that the spring 22 is located at the end of the hollow member 21, it can easily be held within the fence post 10 and this improves the security and structural integrity of the device.

[0016] The main portions 16 of the pales 14 have a similar construction in which a hollow outer member 24 holds a plurality of rods 25, the rods being biassed by a spring 26. The portion in which the spring is retained is housed within the lower portion 19 of the upper rail 12. Again, a corresponding further spring can be provided at the opposite end of the pale which, as can be seen in Figure 4, is located in the ground 11 thereby reducing external tampering.

[0017] Figure 4 shows how the lower posts of the main portions 16 of the pales 14 extend into the ground to reduce the possibility of external tampering. The lower rail 13 connects to the fence post 10 by means of internal connectors 28, thereby reducing the possibility of tampering at this portion of the fence panel. Although not shown in this example, the lower rail may also incorporate a structural member according to the invention. The fence post 10 also includes rods 25 and associated spring 26.

Claims

1. A structural member for a fence post or panel, the structural member comprising:

   a hollow outer member; and
   at least one rod retained within the outer member, the rod being biassed, such that, if the rod is cut, the cut pieces of the rod are urged towards each other so as to hinder further cutting.

2. A structural member according to claim 1, further comprising a plurality of rods retained within the outer member.

3. A structural member according to either claim 1 or claim 2, wherein the outer member is formed from steel.

4. A structural member according to claim 1 or claim 2, wherein the outer member is formed from a material other than steel.

5. A structural member according to any one of the preceding claims, wherein the outer member is formed from substantially square or circular cross-section tubing.

6. A structural member according to any one of the preceding claims, wherein the rod(s) is (are) formed from a non-ferrous material.

7. A structural member according to any one of the preceding claims, wherein the rod(s) is (are) biassed by one or more springs.

8. A structural member according to claim 7, wherein a spring is located at one or both ends of the hollow outer member.

9. A fence post incorporating a structural member according to any one of the preceding claims.

10. A fence panel including a structural member according to any one of the preceding claims.

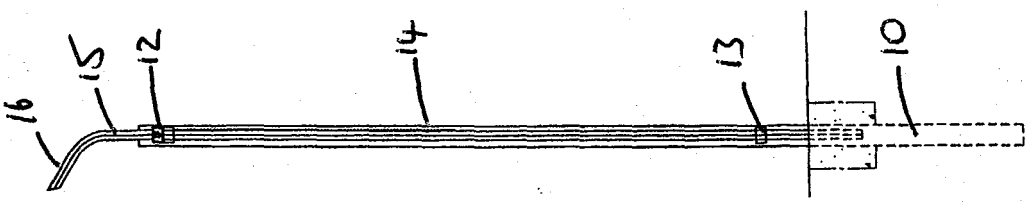


Fig 1b

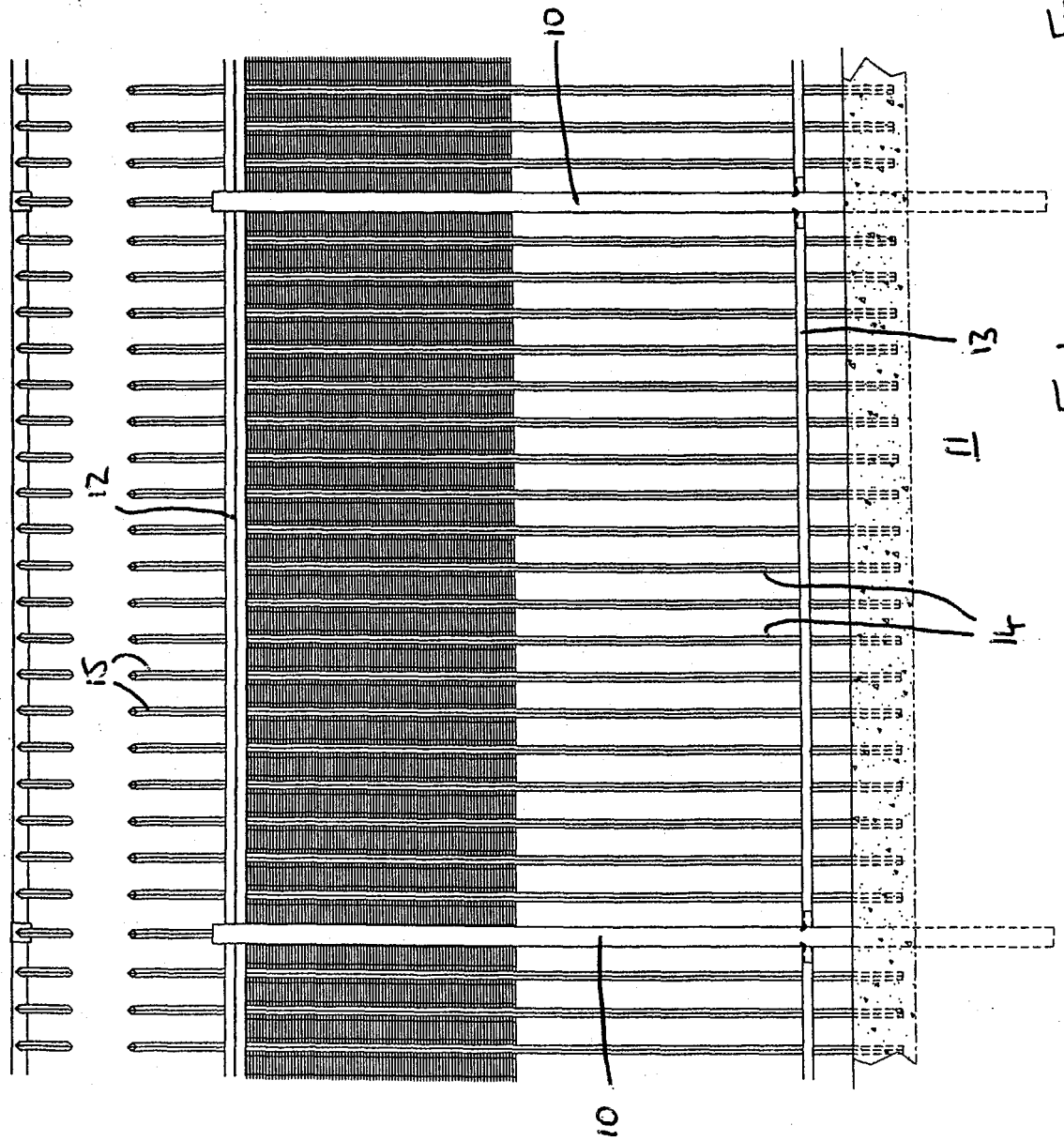


Fig 1a

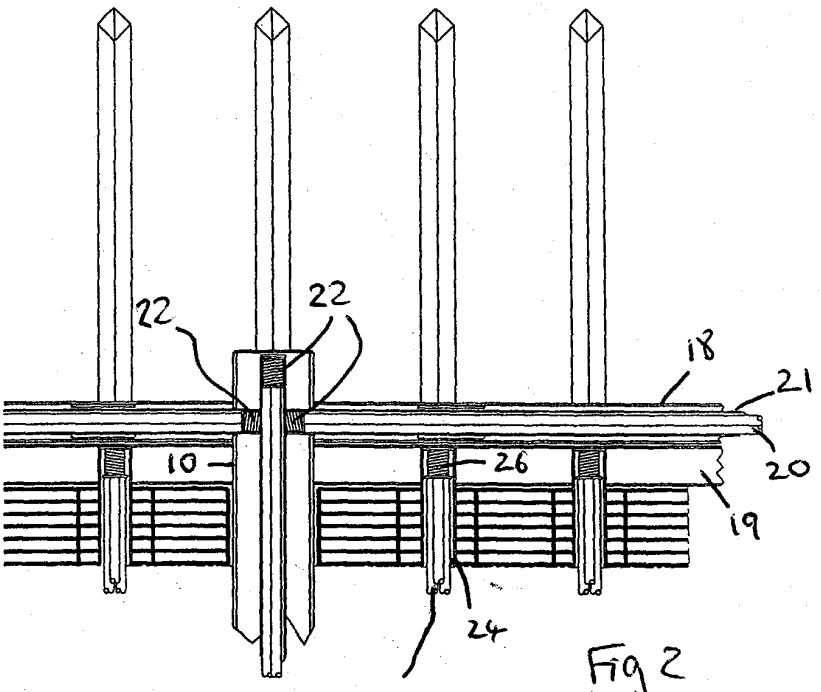


Fig 2

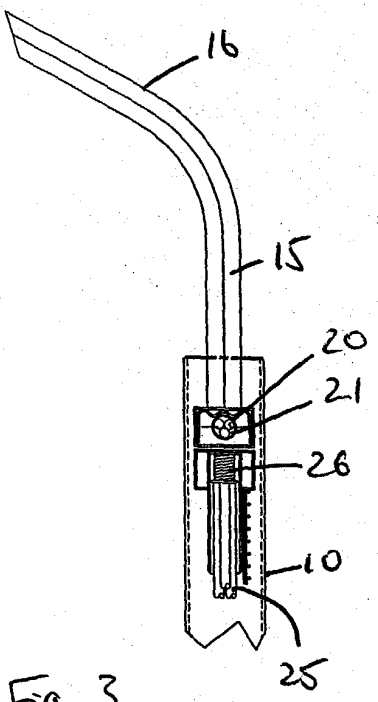


Fig 3

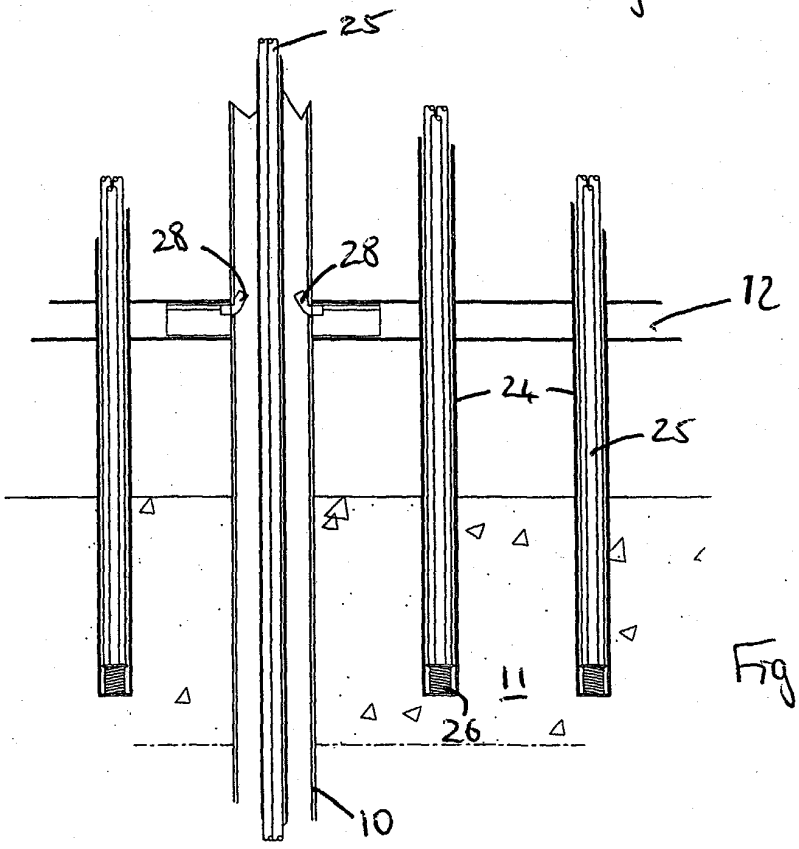


Fig 4

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EUROPEAN SEARCH REPORT

Application Number
EP 04 25 4707

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	29 November 2004	Porwoll, H

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 25 4707

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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