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Hellerich et al.

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[54] **REINFORCED POST OF SYNTHETIC PLASTIC MATERIAL**

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[51] **Int. Cl.** **E04h 17/20**

[58] **Field of Search** 256/19, 24, 35, 51, 256/50, 10; 52/155, 158, 157

[56] **References Cited**

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[57] **ABSTRACT**

An elongated post body is composed of synthetic plastic material in which metallic reinforcing elements are embedded and extend longitudinally. One or more stress-transmitting elements are connected with the reinforcing elements, being in part embedded in the material of the post body and extending in part beyond the post body where they may be provided with hooks, eyes or the like.

5 Claims, 2 Drawing Figures

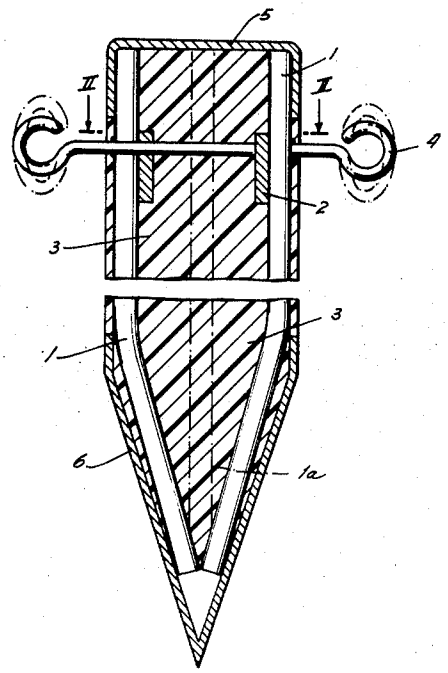
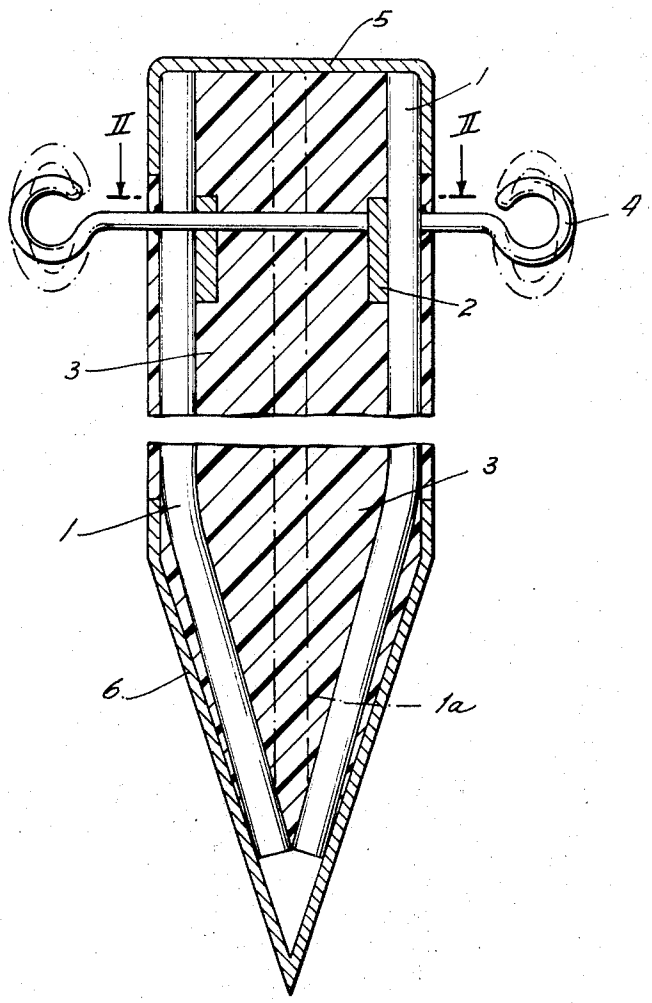


FIG. 1



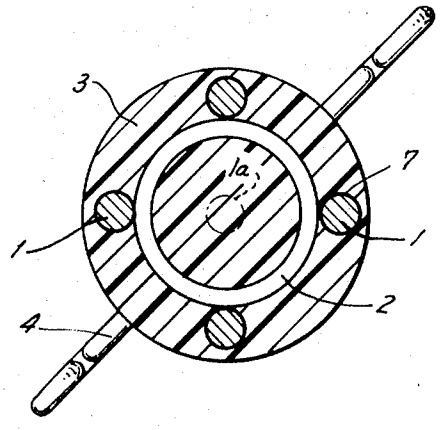


FIG. 2

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REINFORCED POST OF SYNTHETIC PLASTIC MATERIAL

BACKGROUND OF THE INVENTION

The present invention relates generally to posts, and more particularly to reinforced posts. still more particularly the invention relates to reinforcing posts of synthetic plastic material.

There are many applications where posts of various types are utilized. By way of example only a few will be pointed out herein, namely the application of posts to support lanterns or lights, posts which support antennas, posts which are supports for structural applications, posts which are used in fence constructions, and posts which are used in vineyard applications. For these and other applications posts have heretofore been used which are conventionally made either of wood, metal (usually steel) or concrete. The problem with all of these prior-art posts is that they have certain disadvantages. For instance, posts of wood can be given a lifetime of at most ten years only by repeatedly treating them with various preservatives, this being time-consuming and, of course, also expensive. Concrete posts, on the other hand, are difficult to handle because they are heavy and, in addition, because they are brittle and tend to break quite readily if not handled very carefully. Metal posts, of course, are expensive and must also be given treatments to preserve them against damage by the elements, for instance rusting.

SUMMARY OF THE INVENTION

It is, accordingly, an general object of the present invention to overcome the aforementioned difficulties.

More particularly it is an object of the present invention to provide an improved post which is not possessed of these disadvantages.

Still more specifically it is an object of the present invention to provide a post of synthetic plastic material which has a strength and life expectancy which are much more in keeping with the manufacturing expenses involved than what is known from the prior art.

In pursuance of the above objects, and of others which will become apparent hereafter, one feature of the invention resides, briefly stated, in a post which comprises an elongated post body of synthetic plastic material in which a plurality of metallic reinforcing elements are embedded and extend longitudinally. At least one stress-transmitting element connects the material of the post body and the reinforcing elements and is at least in part exposed at the exterior of the post body in a region where the same is to be subjected to external stresses when in use.

The term "post" as employed herein of course refers not only to comparatively short posts such as fence posts or the like, but also to such posts which may sometimes be designated as "masts" or "poles" and which may support lamps or the like. If a post according to the present invention is to be driven into the ground, then it is preferable that its trailing end be provided with a stress-transmitting element in form of a plate or cap connected with the metallic reinforcing elements, and its leading end with a stress-transmitting element in form of a cap or similar element which is pointed and also connected with the reinforcing elements. This latter element, of course, facilitates or even makes possible for the first time, the driving of the post into the ground.

If the post is to be used as a fence post or in vineyard applications, then it is advantageous if one or more of the stress-transmitting elements are provided exteriorly of the post body with hooks, eyes or the like to which wires or mesh or the like can be connected. Depending upon the material used for the reinforcing elements and the stress-transmitting element or elements, they can be connected by welding, soldering, by interlocking couplings, by clamps or the like. It is preferable, and most advantageous in terms of the results achieved, but not necessary that the material of the reinforcing elements and of the stress-transmitting element or elements be steel.

The relationship of bending or breaking resistance of the post to their weight depends largely upon the adhesion of the reinforcing elements and stress-transmitting elements in the synthetic plastic material of the post body. It is therefore advantageous to facilitate this adhesion in that the surfaces of some or all of these elements are roughened, that is provided with kerfs, grooves, serrations or the like. In addition, and this is also a protection against corrosion, it is advantageous to coat some or all of the elements with synthetic plastic material which will adhere well to the synthetic plastic material of the post body, for instance a phenolic resin.

By properly orienting and configurating the reinforcing elements and stress-transmitting element or elements with reference to one another, a particularly good strength to weight ratio is obtained, if the synthetic plastic material of the post body consists of a cellular synthetic plastic, for instance cellular polyurethan or cellular polyisopren, in which case it is generally preferable that the plastic will have closed pores or cells at least at the outer surface of the post body. This prevents entry of moisture to the embedded metallic reinforcing and/or stress-transmitting elements. Of course, various types of cellular synthetic plastic are suitable and known, and generally speaking they will be of the "hard" foam plastic type.

The manufacturing expenses may be lowered, and the strength of the synthetic plastic material of the post body may be further improved, by admixing with this synthetic plastic material such filler materials as swelling clay, swelling silicones, swelling glass or the like which are well-known to those skilled in the art.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmentary axial section through a post in accordance with an embodiment of the present invention; and

FIG. 2 is a section taken on line II—II of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Discussing the drawing now in detail it will be seen that we have illustrated a post according to one embodiment of the present invention, which has a post body 3 of synthetic plastic material. This material may

be in form of any suitable well-known non-cellular plastic, or it may be in form of one of the suitable and also well known cellular plastics, that is a "hard" cellular plastic. The post body **3** is reinforced by a plurality of longitudinally extending reinforcing elements **1** of which four are shown in the illustrated embodiment and which extend longitudinally of the post body **3** in at least substantial parallelism with one another. The post body **3** is provided with a formed cap **6** which reinforces it at its leading end and which is configurated with a point so that the post body can be readily driven into the ground. The trailing end of the post body is provided with another formed element **5,** which could be a plate but is here configurated as a cap. Both the elements **5** and **6** are connected in, stress-transmitting relation with the four reinforcing elements **4** so that when stresses are applied to them, they are transmitted to the reinforcing elements primarily, rather than primarily being transmitted to the material of the body **3.** The reason for the provision of the element **5** is, of course, to make it possible to exert blows on the trailing end of the post body **3** so as to drive the latter into the ground.

A further stress-transmitting element **2,** here configurated as a ring or annulus-shaped member, is located in the region of the upper or trailing end of the post body **3,** where it connects the reinforcing elements **1** with one another and also with the material of the post body **3** itself, by being partially embedded therein.

Portions of the element **2** extend outwardly beyond the exterior surface of the post body **3** configurated as hooks **4** into which wires, fencing or the like may be hooked or to which such components may otherwise be connected. Reference numeral **7** diagrammatically identifies a coating of phenolic resin which is provided in the illustrated embodiment on all metallic components, that is on the elements **1, 2, 4, 5** and **6** to protect them against corrosion and, insofar as necessary, to facilitate their adhesion to the material of the post body **3** itself. Reference numeral **1***a* indicates diagrammatically in broken lines that one or more additional centrally located reinforcing elements may also be provided.

A post according to the present invention has certain significant advantages over what is known from the prior art. Thus, such a post will for instance have a lifetime of approximately twenty years, which is at least double the lifetime of conventional wooden posts. It further has a substantially lower weight than posts known heretofore, whether they be of wood, of metal or of concrete. It also has a greater bending resistance than conventional posts of identical dimensions and various external components, such as wires, fencing, insulators or the like can be readily secured to a post according to the present invention merely be providing the latter with suitably configurated portions which will become an integral part of the post rather than having to be separately secured thereto as was heretofore the case. Splitting, breaking or the like as a result of the influence of water, moisture and/or frost will no longer be a problem with a post according to the present invention and the smooth continuous non-porous outer surface of the material of the post body makes it difficult for pests, bacteria, fungi or the like to settle on the post body and act upon the same.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of applications differing from the types described above.

While the invention has been illustrated and described as embodied in a reinforced post of synthetic plastic material, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended

1. A post having an upper and a lower end and comprising an elongated body of synthetic plastic foam material having a non-porous outer surface; a plurality of metallic reinforcing elements embedded in the body of synthetic plastic foam material and extending longitudinally therein; at least one stress-transmitting element embedded in the body of synthetic plastic foam material that is connected to each of the embedded metallic reinforcing elements and to at least one other element that extends outside the outer surface of the body of synthetic plastic foam material and is adapted to sustain additional stress to which the post is to be subjected, in normal use; and external reinforcing elements at each of said upper and lower ends of the post, each connected to each of the embedded metallic reinforcing elements and said external reinforcing element at said upper end extending downwardly and enveloping the upper portion of said post.

2. A post as defined in claim **1,** wherein said reinforcing component at said leading end is a pointed element.

3. A post as defined in claim **1,** wherein at least some of said elements have roughened exposed surfaces for facilitating adhesion with the foam material of said post body.

4. A post as defined in claim **1**; and further comprising filler material contained in the synthetic plastic foam material of said post body.

5. A post as defined in claim **1** in which a metallic element thereof is coated with a material that bonds readily to the synthetic plastic foam material of which the body of the post is formed.

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