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TREE STAND

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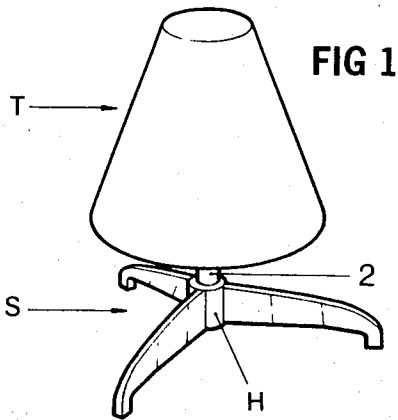


FIG 1

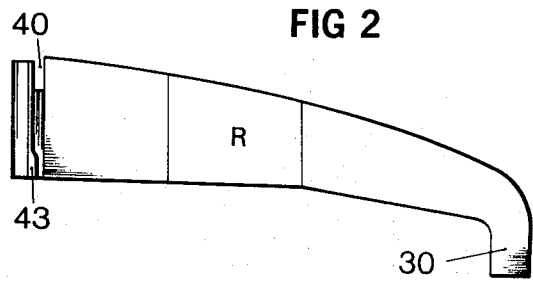


FIG 2

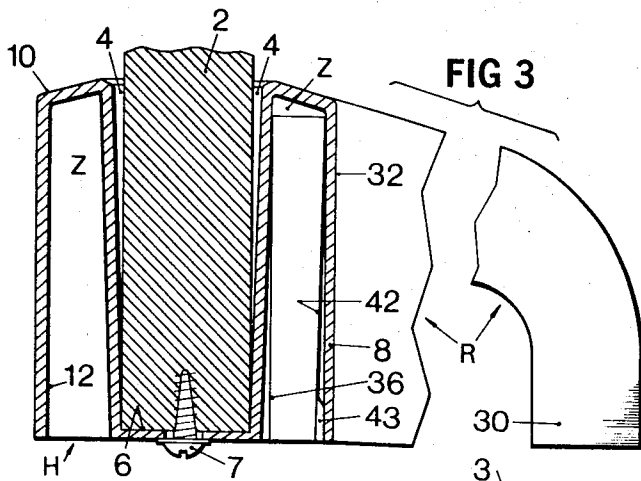


FIG 3

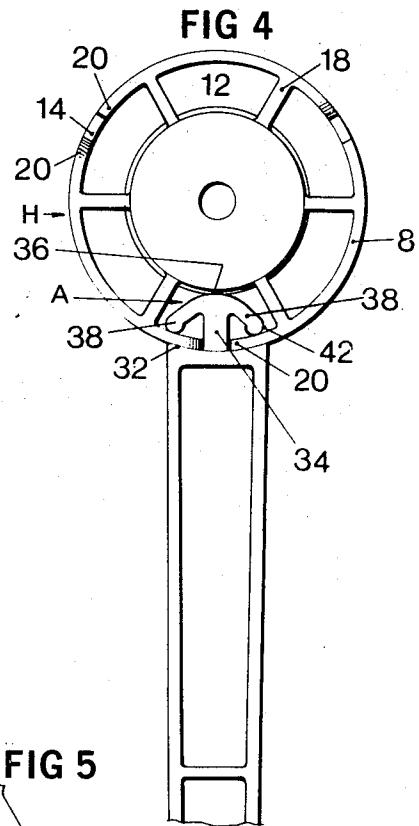


FIG 4

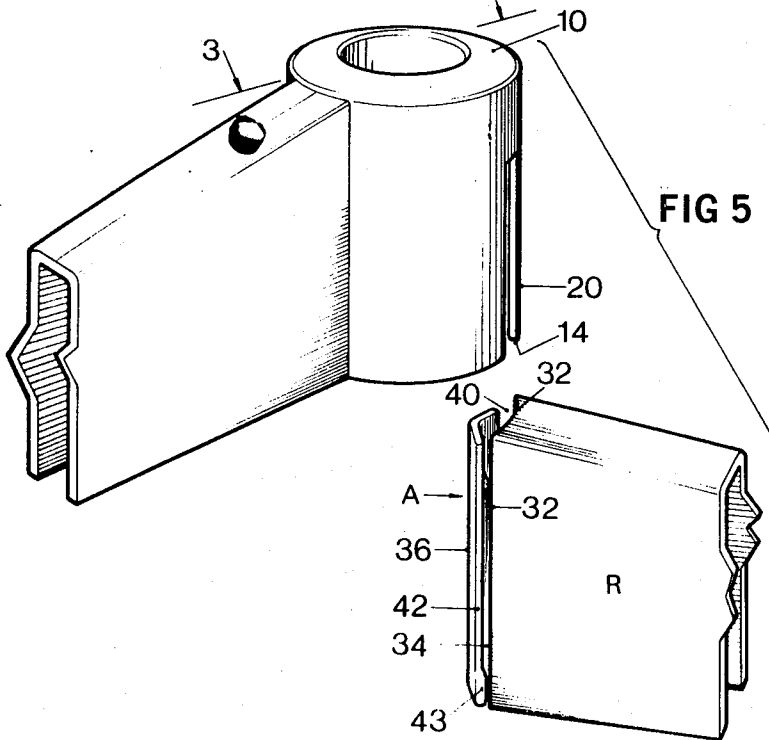


FIG 5

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TREE STAND

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5 Claims

### ABSTRACT OF THE DISCLOSURE

This invention relates to a spider support for supporting a standard having a central hub including a receptacle therein and a fence integral with and in spaced relation thereto. The fence has spaced slots which receive removably installable anchors of spoke elements extending in radial relation to the hub; the hub and spoke elements co-operating to provide a rigid assembly.

The invention relates to a support such as is frequently used as a base for supporting standards—e.g. artificial Christmas trees—in upright, standing, position.

The support particularly visualized by the invention is of that category commonly referred to as "spiders" in which a plurality of spaced legs radiate in the manner of wheel spokes from a central arbor or hub on or in which there may be engaged a post such as a tree trunk.

The support or spider more particularly visualized by the invention is formed of parts which are disassemblable and re-assemblable for storage and use, respectively.

It will be appreciated that, to be effective, a spider as herein contemplated requires to assume reasonably rigid characteristics when assembled in order that it may thereby be enabled to maintain the post in a relatively steady condition. In addition, easy assembly and disassembly is also an obviously important desideratum of the contemplated spider supports.

However, whether because of limited demand or limited utility, the aforesaid desiderate were not ordinarily incorporated in prior devices particularly those designed to retail at popular prices. That is to say, the said prior devices were either lacking the requisite rigidity or, in the alternative, were difficult to assemble and disassemble; having been deliberately rendered so in an effort to achieve steadiness by reducing tolerances to tighten the interfitting of the parts.

The invention, accordingly, seeks to provide a spider support as described which is relatively easy to assemble and disassemble, which provides a steady, stable support when assembled, and whose design permits it to be manufactured inexpensively—e.g.: of plastics.

Otherwise stated, an important object of the invention is to provide a spider support in a design which lends itself to construction of plastic material, e.g.: Polyethylene, and which is capable of yielding an economical yet sturdy and smoothly functioning product comprising a hub and spoke elements which lend themselves to easy assembly as a spider support and are equally easily disassembled for storage; the spider, in this assembled state, providing sturdy and stable support for its load.

In a spider support in accordance with the invention,

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comprising a hub and spoke elements detachably attachable in radial relation thereto, the hub preferably includes in its construction, a receptacle for a post as aforesaid; a fence surrounding said receptacle in spaced relation thereto, and spaced slots in said fence. In their turn, said spoke elements are preferably equipped with anchors removably installable in said slots; abutments engaging said fence when the anchors are installed in the slots, and channels between the anchors and the abutments; the aforesaid slots presenting edges which are receivable in said channels when the anchors are installed in the slots as aforesaid, and which are clampable therein to impart stability to the resulting structure.

The various objects of the invention, both stated and unstated, will be clear from the following description of one embodiment thereof which has been selected and is illustrated in the annexed drawing, by way of example only, to bring out the elements, parts, and principles constituting the invention. In the said drawing, wherein like reference devices identify like parts throughout.

FIG. 1 is a perspective view of the present support with a formalized tree supported thereby;

FIG. 2 is a side elevational view of a spoke;

FIG. 3 is a sectional view along line 3—3 of FIG. 5 with a standard positioned in the receptacle;

FIG. 4 is a bottom plan view showing a spoke in position on the hub, and

FIG. 5 is an isometric view of the hub with part of one spoke secured thereto and another in alignment with a slot in the hub for positioning.

The nature of the present spider support S and its function will be apparent from FIG. 1 of the drawing wherein said spider S will be seen to comprise a plurality—three, in this instance—of leg elements hereinafter conveniently termed spokes R which radiate in the manner of wheel spokes from a central hub H which is interengageable with post 2 constituted in this case by the trunk of an artificial tree T, installed within a receptacle provided as said hub H.

For the purpose of subsequent description, said hub H will be deemed to be in its upright position in FIG. 3 whereby, it will be observed, that receptacle 4 aforesaid is provided with a floor 6 through which post 2 installed in receptacle 4 as aforesaid is fixed therein by a screw 7.

It will also be appreciated that receptacle 4 must have sufficient depth to provide reasonably secure accommodation for the lower end of the post 2 installed therein. In ordinary circumstances, two or three inches will constitute sufficient depth for this purpose; this being, then, also the general overall height of the hub H.

Said hub H further includes a fence 8 of relatively thin stock having a width which is also commensurate with the depth of the receptacle 4 and which surrounds the latter in spaced and generally co-axial relation therewith. Said fence 8 is also coterminous with the receptacle 4 and its upper edge is integrally connected thereto by a fillet 10 at the top of hub H which forms a base or ceiling, as the case may be, for trench 12 between the receptacle and the fence.

Said fence 8 is provided with a number of axial slots 14 in each of which a spoke R is installable in the manner to be described. As shown, each said slot 14 depends from

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a point slightly below fillet 10 to the lower, free edge of fence 8 at which said slot 14 is open to entry.

For reasons which will duly appear, there is a narrowed zone Z in said trench 12 which is located, preferably, immediately adjacent the fillet 10. In addition, further attention is directed to webs 18 which bridge the trench 12 to interconnect fence 8 and receptacle 4 near the edges 20-20 of each slot 14.

Following now is a description of a spoke R which is, of course, identical to each of the other spokes R in this embodiment so that a description of one of them will suffice for all.

As shown in FIG. 2 of the drawing, the said spoke R is suitably elongated to afford requisite stability to spider S and is offset at one end, which may be of reduced cross-section as shown, to form a foot 30. At its opposite end which is joined to hub H as seen in FIGS. 3 and 4 the said spoke R is preferably widened to match the height of the hub H and its abutting end is shaped conformingly to fence 8 and will be noted in FIGS. 4 and 5 so as to be capable of mating therewith. That is to say, the fence 8 being cylindrical in the present embodiment, the aforesaid widened end of spoke R is arched to match the curvature thereof thus forming a mating abutment 32 therefor in which nests the abutting portion of fence 8.

By way of review, the height of said abutment 32 approximates the height of hub H while its thickness exceeds the width of slot 14 so that, when placed thereover in abutting relation to fence 8, it will overlap the aforesaid slot edges 20-20.

An anchor A attached to and extending forwardly from spoke R is installable in a slot 14 to secure said spoke R to said hub H in radial and fairly rigid relation thereto.

Said anchor A includes a shank 34 which extends forwardly from abutment 32 in the manner of a fin and is thin enough to enter the slot 14 and tall enough to fill it. It is desirable, however, that the shank thickness be sufficiently less than the slot width to render said shank 34 freely slidable in said slot 14 when the anchor is installed therein except as hereinafter noted. The forward projection of shank 34 into trench 12 is such as to permit the fence 8 to nest in abutment 32 as shown in FIG. 4 when said shank 34 is installed in slot 14.

Said shank 34 is capped by an angular formation providing a thin and relatively flexible wing 38 integrally attached to shank end 36 on each side thereof and flaring rearwardly therefrom so that, when the latter is installed in a slot 14, the said wings 38-38 will engage the fence 8 on each side of slot 14 in the interior of trench 12.

As will be seen in FIGS. 2 and 5 the dimensions and disposition of the anchor parts are such as to provide a thin channel 40 between abutment 32 and each wing tip 42. Each said channel 40 receives a slot edge 20 when the anchors are installed in the hub with said slot edges clamped between the anchors and the abutments providing a reasonably rigid assembly. Said slot edges are of a thickness less than channels 40 and therefore are relatively freely slidable in the channels during installation of the anchors in the slots and before the clamping of the slot edges which does not occur until each anchor is almost completely installed in its slot. The lower portion of each channel 40 as viewed in the upright spoke position of FIG. 2 includes a constriction therein, effected in this case by embossment 43 which extends into the channel thereby narrowing the channel at that point to a width which is less than the thickness of slot edge 20 normally receivable therein. Said constrictions are disposed so as to be reached by said slot edges only upon virtually complete installation of the anchors in the slots. Thus, when a spoke R is attached to hub H by inserting shank 34 into the open end of slot 14 the slot edges 20-20 will be freely receivable in channels 40-40 aforesaid; the shank 34 being then slidable in slot 14 while the slot edges

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20-20 are slidable in channels 40-40 to effect installation of said anchor A in said slot 14.

As has been indicated the parts are so dimensioned and proportioned as to permit relatively unimpeded movement of shank 34 in slot 14 and slot edges 20-20 in channels 40-40 until such time as the upper portion of the anchor enters the narrowed trench zone Z and the wing tip embossments constricting channel 40 initially engage the fence.

It may now be appreciated that the initial and major movement of the anchor A in its slot 14 is achieved with relatively little effort until it is impeded by narrowed trench zone Z and embossments 43 and that only a slight additional force is necessary to effect a firm clamping and wedging of the anchor when it encounters these impediments. The withdrawal of the anchor is accomplished with equivalent ease as only a slight force is necessary to overcome the clamping and wedging effects after which the anchor is freely slidable out of the slot 14.

It should be observed at this point, in viewing FIG. 3, that spoke R is in its final assembled position. As can be seen the upper portion of the anchor A is in the narrowed zone Z and is wedged therein between the receptacle 4 and fence 8. Also it can be observed that the embossment 43 and the abutment 32 co-operate to provide a clamping effect on fence 8 inasmuch as the thickness of the fence exceeds the constricted width of the channel between the embossment and abutment prior to assembly. In effect it should be noted that there are five points of contact which co-operate in the clamping action in the upper portion of the assembly namely the free end 36 of the shank in abutment with the receptacle, the two wing tips 42 and the corresponding and co-operating abutments 32. In the lower portion of the assembly there are only four points of contact namely, the two wing tip embossments 43 and the two corresponding and co-operating abutments 32 respectively, the free end 36 of the shank being spaced from and out of contact with the receptacle.

What I claim is:

1. A spider support for supporting a standard comprising:
  - a hub and
  - spoke elements detachably attachable in radial relation to said hub; said hub including,
  - a receptacle for holding a standard in an upright position,
  - a fence integral with and surrounding said receptacle in spaced relation thereto, and
  - spaced slots in said fence; said spoke elements including,
  - anchors removably installable in said slots for assembling the spoke elements with said hub,
  - abutments engaging said fence when said anchors are installed in said slots, and
  - channels defined by and between said anchors and said abutments;
  - the said slots presenting edges receivable in said channels when the anchors are installed therein as aforesaid with said edges clamped between the anchors and the abutments providing a rigid assembly;
  - a trench between said fence and said receptacle into which said anchors intrude when they are installed in said slots, and
  - wings forming parts of said anchors flaring towards said fence and engaging it within said trench when the anchors are so installed;
  - said wings cooperating with said abutments to define the channels aforesaid.
2. A spider support as set forth in claim 1 wherein: said trench has a narrowed zone within which the said wings are wedged between the receptacle and the fence.
3. A spider support as set forth in claim 2 including: constrictions in said channels for effecting clamping of

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the slot edges therein as aforesaid; said clamping means and the narrowed zone of said trench being respectively disposed to procure clamping of the slot edges and wedging of said wings only when the anchors have been substantially completely installed in said slots.

4. A spider support as set forth in claim 2 including a top integrally connecting the receptacle and the fence, the slots extending from the bottom of the fence to a point below its top.

5. A spider support as set forth in claim 3 including: webs joining the fence and the receptacle between said slots.

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U.S. Cl. X.R.

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