SUPPORT OR STAND FOR TREES

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ABSTRACT

A tree support or stand of the general type employing a trunk watering container, a base member engaging the bottom of the tree trunk, trunk engaging jaws pivoted to the container, and pivoted links extending between the base member and the trunk engaging jaws, characterized by a construction in which the water in the container is distributed to provide optimum stability with minimum height, and economies of manufacture are effected through use of identical reversible and simplified parts which reduce costs of manufacturing equipment, such as dies, and reduction of scrap material and assembly time.

9 Claims, 4 Drawing Figures
SUPPORT OR STAND FOR TREES

This application is a continuation-in-part of application Ser. No. 783,871, filed Dec. 16, 1968, now abandoned.

BACKGROUND OF THE INVENTION

Numerous tree stands, particularly those for supporting Christmas trees, have been proposed which utilize the weight of the tree to force jaws into engagement with the trunk and provide a trunk base support and circumferential supports in the plane of the jaws. An early device of this type is exemplified by U.S. Pat. No. 392,871 to Langenbach. A later development is exemplified by U.S. Pat. No. 1,848,556 to Berman which employs a similar base and pivoted jaw system, differing essentially in that the base is formed as a container which feeds water to the tree trunk to prevent premature shedding of the tree foliage. In another similar concept links were provided between the base and jaws, as exemplified by U.S. Pat. No. 1,217,655 to Stanton which also discloses the use of a water container. A linkage system of similar form is disclosed by U.S. Pat. No. 3,045,959 to Herrington, differing from the former in certain refinements of the linkage and a separate water container which is not connected to the trunk engaging jaws and hence may optionally be used. The Herrington patent also discloses further refinements in which the leverage system to the trunk engaging jaws considerably multiplies the force of the tree weight, improving tree stability against overturning by increase in the radial distance between the trunk and floor supports, and reduces in overall height permitting the lowermost branches of the tree to be disposed somewhat closer to the floor which is often desirable to obscure view of the stand, reduce overall height of the tree for ceiling clearance purposes, and to better simulate its appearance in its original natural environment.

In the art as so far developed, and as particularly exemplified by the patents to Stanton and Herrington, the user must supply his own water container, which in Stanton is a conventional bucket and in Herrington is a shallow pan which might be found about a household. The container, if already available, would, of course, effect some economy to the user but if not available might increase his overall cost in addition to subjecting him to the inconvenience of obtaining same. Containers forming an integral part of a tree stand have been proposed which would obviate the disadvantages just referred to and as exemplified by the patent to Berman; however, they have been of relatively small capacity, requiring frequent refilling, and the mass of water was not distributed in a manner to provide optimum resistance against accidental overturning of the tree. The patent to Stanton discloses a water container which is of adequate capacity to feed the tree during its normal period of use, which might be of the order of two weeks as a maximum, but the mass of water is disposed mainly in a vertical direction with a relative small effective area at its base, which mass, if it were distributed over a large area with a reduction in height would provide increased stability against an overturning moment.

It now becomes apparent from the discussion of the prior art that certain variations and refinements of same could provide a tree stand having advantages which will become further apparent from the detailed description and claims but which are set out in general features at this point to more readily appreciate same as the description proceeds.

The water container should be shallow with a relatively large base area so that the mass of water in same provides a maximum resisting moment against overturning of the tree. The water container should form a part of the stand, as marketed, to obviate a user's inconvenience or improvisation in obtaining a suitable container of optimum effectiveness, and the various parts should be minimum in number of different kinds, constructed with a minimum number of inexpensive dies and at a high production rate, have reversible modes of assembly to facilitate more rapid factory assembly, or obviate inadvertent improper assembly by the user, and minimize the quantity of manufacturing scrap.

The present invention provides such desirable features which, along with others as will become apparent from the description and appended claims, form its principal objects.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a top plan of the subject of the invention, a portion being broken away, including a portion of a tree trunk;
FIG. 2 is a section taken on intersecting planes 2—2; and
FIG. 3 is a view, like FIG. 2, showing a portion thereof with a modification of same;
FIG. 4 is a view similar to FIG. 2 showing another modification.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing, tree support 10 comprises, in general, a circular water container 12, a trunk engaging base member 14 and three identical equiangularly spaced stabilizing members 16, each pivotally connected at its outer end to the container and pivotally connected intermediate its ends to the base member by a link 18, the details of each of which will now be described in detail.

Container 12 is provided with a bottom 20 of relatively large diameter and an upstanding rim 22 of relatively small height which may contain, during use, a body of water which is distributed in a manner such that with a minimum quantity of same it provides an optimum moment and resistance against accidental overturning in contradistinction to the resistance which would otherwise be afforded if the same mass of water were distributed in the form of a body of lesser diameter and greater height.

Each stabilizing member 16 is formed of two identical halves 24, 24, each having an intermediate portion 26 with a slight joggle 27 therein, a laterally bent inner portion 28, an outer terminal portion 29 disposed parallel with the intermediate portion and a laterally bent portion 30 joining the intermediate and end portions 26 and 29. The intermediate portion 26 is provided with an aperture for receiving a threaded fastener 32, such as a stove bolt and nut, a like aperture for receiving another identical threaded fastener 34 and a third aperture for receiving a third identical fastener.
3. All apertures are disposed on the longitudinal axis so that when a pair of the members are relatively rotate 180° and secured together with fastener 32, a stabilizer is formed, as best illustrated in FIG. 1, with a V-shaped trunk engaging jaw 38, the outer terminal ends 29 being spaced to provide pivotal connections to a U-shaped member 40 the bight 42 of which is secured to the rim 22 of the container 12 by a pair of spaced fasteners 44, 44 extending through the bight 42 of the U-shaped member 40 and the rim 22 of the container 12. The apertures through the bight and inwardly projecting leg portions 46, 46 are apertured on the longitudinal axis and with symmetry about the transverse central axis so that the U-shaped member 40 may be secured to the rim 22 in either of two alternative positions 180° apart.

Base member 14 is formed from sheet material sheared into the form of an equilateral triangle, with slightly flat corners, so that when partially severed inwardly from each corner, as best shown in the upper portion of FIG. 1, punched and folded, an upstanding apertured lug 48 is formed which receives a threaded fastener 50 (FIG. 2) which pivotally connects it to the lower end of a link 18. As will be apparent from the symmetry, the base member 14 may be connected to the links 18 in any of three alternative positions of assembly. The central portion of the base member is punched to provide integral upstanding triangular prongs 52 which are impaled in the lower surface of the tree trunk during the use of the stand.

FIG. 3 illustrates a modification of the construction so far described in that link 18c is provided with an elongated slot 54, rather than a circular aperture at its upper end, which permits reduction of storage space when the stand is not in use, links 16 now folding completely into the volume of the container. As will also be apparent, the removal of fastener 34, either in this modification or the construction shown in FIGS. 1 and 2 will permit link 18 or 18c to be folded within the volume of the water container, thus reducing the storage space required between the seasonal uses of the stand.

FIG. 4 illustrates a modification of the container described in FIG. 1 and 2 and 3 in which two braces 56 are pivotally mounted at their ends between the base member 14 and two spaced apart anchoring points on container 12, the points on the container preferably being on the U-shaped member 40 and the anchoring points on the triangular shaped base 14 preferably being at the apices of the triangle. The inner end of the brace member 56 can be pivotally attached to a respective apex of base member 14 by threaded fastener 50 passing through a hole in the inner end of the brace member 56 and the apertured lug 48, and the outer end attached to the U-shaped member 40 by fastener 36 passing through a hole in the outer end and the end 29 of U-shaped member 40.

Addition of brace members 56 does not interfere with the assembly procedure and the nesting features of the device described below. The brace members 56 may be mounted at their outer ends to either end 29 of U-shaped member 40 and are preferably mounted on the outside of portions 30. The construction in which at least two brace members are incorporated in the assembly as described increases the stability of a tree

mounted in the device, particularly, a high tree. The braces 56 can be incorporated in the modification shown in FIG. 3.

Assuming that the stand is factory assembled by the same person, he will have before him container 12, links 30, U-shaped member 40, base 14, and identical stove bolts or similar fasteners. The order of assembly may vary but let it be assumed that U-shaped members 40 are first secured to the container 12. Any U-shaped member 40 will fit any of the three positions in either of two alternative positions. Let it next be assumed the lower ends of links 18 are secured to lugs 48 on base member 14. Preferably, the lugs 48 are so formed that links 18 may be applied in only one position with prongs 52 projecting in the same general direction as the links. This assembly may then be placed on the bottom of the container and a pair of halves 24 secured to the legs 46 of the U-shaped member 40, and to the upper end of a link 18, fastener 32 then being applied to secure the halves together. As will be now apparent, the various parts may be assembled in various reversible positions of assembly but the assembled structure is the same, irrespective of such reversible assembly and the parts cannot be assembled in any other than the correct manner. Thus, this provides a livelihood for unskilled labor or the blind at the same time effecting reduction in cost to the ultimate user. In the event the user disassembles the parts, or if marketed to him in knock-down form, it will be apparent that the manner of assembly is obvious, without instructions, and that if is practically impossible to assemble the parts in improper relationship.

As previously referred to, a joggle 27 may be provided in the intermediate portion of halves 24. The purpose of this is to prevent binding of the upper end of a link 18 when fastener 32 draws the two halves together in abutting relation at a point adjacent the inner end of a V-shaped jaw 38. If it is desired to omit the joggle, intermediate portions 27 may be straight and flat and a spacer, such as a washer the same thickness as a link, applied between the two halves upon which fastener 32 may draw the two halves into abutting relation with the spacer. Alternatively, also, the joggle 27 may be omitted and fastener 32 tightened only sufficiently to prevent spreading of the jaw halves or bends 28, still permitting the upper end of a link to freely pivot on its fastener 34.

In the preferred embodiment all parts are constructed to steel due to its relatively low cost, high strength and ready availability either in the form of standard rectangular rolled on drawn bar or sheet stock. It is to be understood, however, that other materials may be employed if their characteristics are consonant with those referred to. The water container is preferably coated with vitrified enamel, such as employed with enameled cooking ware and the like, to minimize rusting and thereby promote long life. If this refinement is omitted however, U-shaped members 40 may be spot welded to the container, if desired, rather than secured by threaded fasteners or rivets where this construction would further reduce costs. One of the advantages of securing member 40 to the container with removable fasteners reside in reduction of special requirements during manufacture in that the containers are slightly frusto-conical permitting nesting and compact stacking of same.
It is to be understood that this invention is not limited to the exact embodiments of the device, which are merely by way of illustration and not limitation, as various other forms and modifications will be apparent to those skilled in the art. It is therefore intended that the appended claims cover all such changes and modifications.

We claim:

1. A tree support of the type having a base member with means carried thereby for engaging the lower end of the tree trunk, three equiangularly spaced tree stabilizing members each pivoted at its outer end to a water container and having a tree trunk engaging jaw at its inner end, a link for each stabilizing member pivotally connected at its lower and upper ends, respectively, to the base member and a stabilizing member intermediate its ends, the improvements, in combination wherein;

a. said stabilizing members are each constructed of two identical flat bar stock halves, each having an intermediate portion and transversely bent inner and outer end portions, the two identical halves, when rotated relatively and thence assembled with their intermediate portions in juxtaposition, forming one of said stabilizing members which is symmetrical about its longitudinal axis and subject to assembly with the support in either of two alternative reversed positions, their inner ends forming a trunk engaging jaw and their outer terminal ends forming laterally spaced pivotal connections

b. said water container having a circular bottom and an upstanding peripheral rim of a height considerably less than the diameter of the bottom, to provide increased stability against an overturning moment with minimized mass of water contained in same

c. three equiangularly spaced identical U-shaped members, each having a bight portion rigidly secured to said rim, and inwardly directed legs of same being pivotally connected to a pair of said terminal ends of a stabilizing member, each U-shaped member being attachable to said wall in either of two alternative reversed positions
d. each link being apertured symmetrically adjacent its end and pivotally attachable to said base member and between a pair of intermediate portions in any of four alternative positions of assembly.

2. Apparatus in accordance with claim 1 wherein said base member is constructed of sheet material in the form of a substantially equilateral triangle, whereby a plurality of such base members may be stumped from a sheet with minimum scrap, each corner being partially severed and folded upwardly to provide a lug to which a link is pivotally attached at its lower end.

3. Apparatus in accordance with claim 2 wherein said base member is punched to provide at least one integral upstanding prong for impaling into the lower end of a tree trunk.

4. Apparatus in accordance with claim 1 wherein the transversely bent inner portions of a pair of parts, forming a stabilizing member, are so bent to provide a V-shaped trunk engaging jaw, diverging from the intermediate portion of same.

5. Apparatus in accordance with claim 1 wherein the transversely bent outer portions of a pair of parts, forming a stabilizing member, are so bent to provide a V-shaped configuration diverging from the intermediate portion of same.

6. Apparatus in accordance with claim 1 including means for securing a pair of said intermediate portions of a stabilizing member together to prevent separation of same.

7. Apparatus in accordance with claim 1 wherein the upper end of each link is pivotally connected to a stabilizer member closer to its jaw than to its outer end.

8. The tree support of claim 1 in which pivotal braces are each mounted by their ends between the base member and an anchoring point on said container.

9. The tree support of claim 9 in which the braces are limited to two in number and one end of each brace is attached to one of said U-shaped members and its other end is attached to the corresponding apex of said triangular base.

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