Oct. 20, 1959 F. O. DUTTON 2,909,344

CLAMPING DEVICE

Filed Sept. 3, 1954

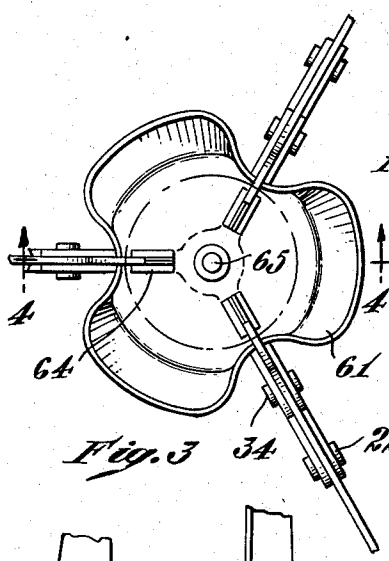


Fig. 3

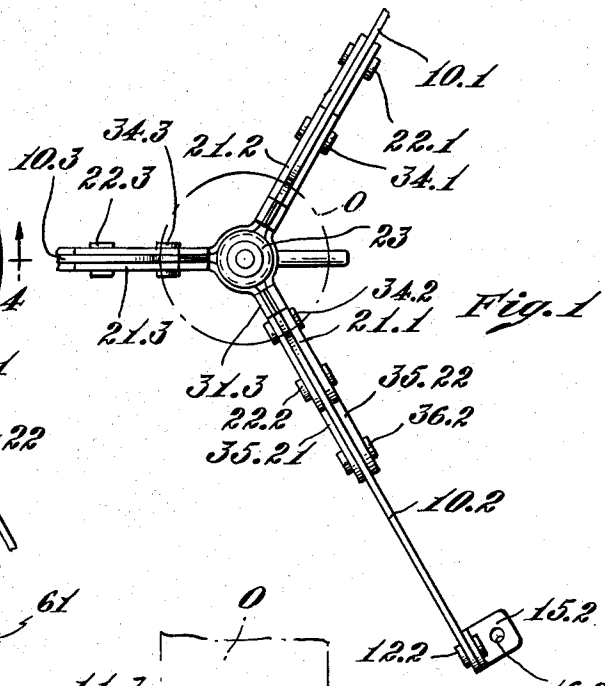


Fig. 1

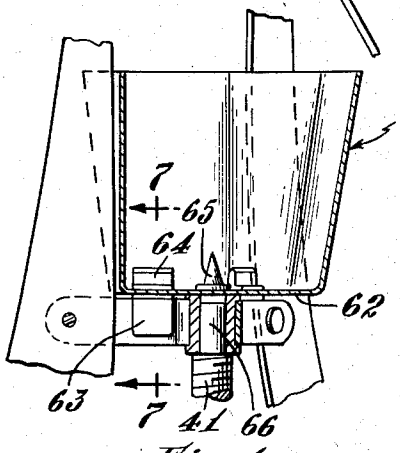


Fig. 4

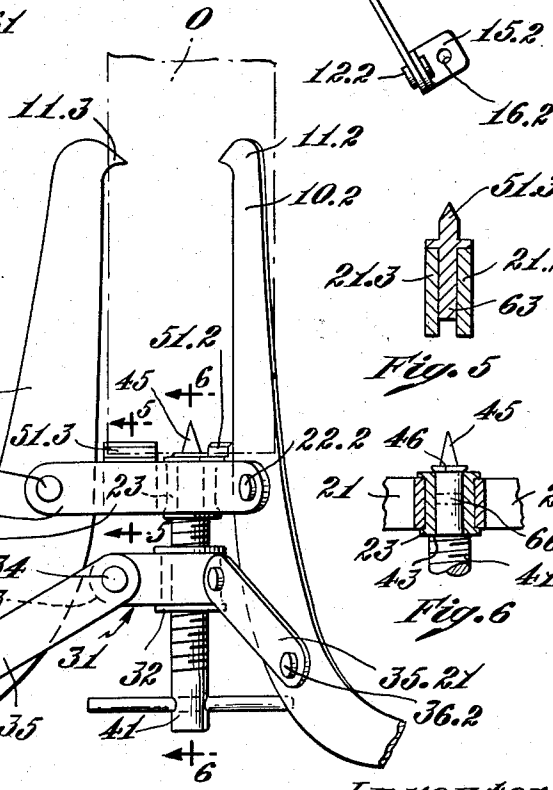


Fig. 2

Fig. 5

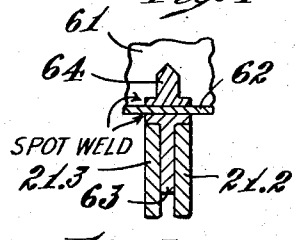


Fig. 7

Fig. 6

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United States Patent Office 2,909,344
Patented Oct. 20, 1959

2,909,344

CLAMPING DEVICE

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Application September 3, 1954, Serial No. 454,011
3 Claims. (Cl. 248—44)

This invention relates to devices for holding objects rigidly in upright position; it can be applied to such articles as posts, supports, columns, poles and masts, but is especially suited for Christmas trees and for that purpose it includes optional provisions for watering the tree held therein.

Objects of the invention are to provide a device of the above nature which clamps the object to be supported securely and by positive action, which is rigid, stable and secure to prevent disengagement and tilting movement between the object supported and the clamping device, which can be easily tightened upon possible shrinkage of the supported object, which permits the easy and yet secure attachment of a tank for a liquid, and which device can be used with or without tank at the choice of the user, and a further object is generally to provide an improved device of this type which is particularly sturdy and reliable and yet easy to handle and comparatively inexpensive and simple in manufacture.

A brief summary of the invention indicating its nature and substance, for attaining the above objects, is as follows.

A holding device according to the invention comprises three or more pivoted clamping and supporting members which are centrally pivoted on a rigid frame platform or spider, which have on one end means such as claws for engaging the object to be supported, which have on the other end leg portions adapted to rest on a supporting surface, and which have, between these leg means and the pivot points on the spider, hinge provisions from which extend toggle links that are at their other ends hinged to a hub or toggle nut through which extends a threaded spindle that is confined in the spider for rotary movement thereon. The claws are forced inwardly by forcing the leg portions outwardly if the spider and toggle hub are forced apart with the screw. The spider has a central spur and can have radial edge prongs, both for engaging the object to be supported; these securing members can be fastened to the screw and spider proper or to a tank which is adapted to be removably attached to the spider instead of the edge prongs. In another important aspect of the invention, the aforesaid tank rests on the spider and is removably attached thereto by ridges extending into recesses of the spider; in a preferred embodiment the tank bulges out between the clamp supports in order to accommodate a considerable amount of liquid and to facilitate filling, and has attached to the inside of its bottom a spur and edge prongs for securing the object to be supported, in the same manner as such spur and prong edges can be attached directly to the spider, making it easily possible to sell and use the device either with or without the tank provisions.

These and other objects and aspects of novelty of the invention will appear from the following description of a typical embodiment illustrating its novel characteristics. This description refers to a drawing in which

Fig. 1 is a top view of the device;

Fig. 2 is a side elevation corresponding to Fig. 1;

Fig. 3 is a top view similar to Fig. 1 but including a tank;

Fig. 4 is a section on lines 4—4 of Fig. 3;

Fig. 5 is a detail section through an edge prong, on lines 5—5 of Fig. 2;

Fig. 6 is a detail section through the center prong, on lines 6—6 of Fig. 2; and

Fig. 7 is a section through the tank fastening and prong portion on the tank, on lines 7—7 of Fig. 4.

As shown in Figs. 1 and 2, a preferred embodiment of the invention has three clamping and supporting members, **10.1**, **10.2** and **10.3** which have at the upper ends claws **11**, at the lower ends curved legs, and pivoted thereto at **12** angular foot portions **15** with holes **16** (Fig. 1) that can be used, if desired, to tack, screw or otherwise secure the legs to the supporting surface.

The members **10** are pivoted on a frame or spider **21** by means of rivets **22**. The spider **21** consists (Figs. 1 and 2) of three angular pieces **21.1**, **21.2**, **21.3** which are curved outwardly around a central sleeve or bushing **23** which can be spot-welded to the spider angles.

A toggle head **31** (Fig. 2) has at its center a toggle hub **32** with an inside thread, constituting a nut. The head **31** has further three extensions or arms **33** to which are pivoted at **34** the toggle links **35** which are at their other ends, at **36**, pivoted to the legs **10**. As indicated in Fig. 1, there are altogether six toggle links, such as **35.21** and **35.22** pivoted to leg **10.2** and angular members **31.1** and **31.3** of the toggle head.

A screw spindle **41** is threaded into toggle nut **32** and, as shown in Fig. 6, it extends into the bushing **23** of the spider **21**, transmitting its thrust by way of a shoulder **43**. The screw spindle **41** ends into a spur **45** for engaging center of the object to be supported. In order to prevent the spindle from falling out of bushing **23**, its upper shoulder, below the spur **45**, can be turned out as indicated at **46**. As indicated in Fig. 5, three edge pieces **51** are inserted between the arms **21.1**, **21.2**, **21.3** of spider **21**. These edges can be spot-welded to the spider arms, or loosely inserted in order to permit the use of tank. For the same purpose, the spur **45** can be a separate piece, as indicated at **66** of Fig. 6.

Especially for use as a Christmas tree holder, a tank can be combined with the above described support, as follows.

As shown in Figs. 3 and 4, a cloverleaf shaped vessel **61** has a bottom **62** which fits between the legs **10** but bulges outwardly therebetween, thus accommodating a considerable amount of liquid and permitting easy access for filling. As indicated in Figs. 4 and 7, supporting ridges **63**, for example cut from a T-section, are welded to the bottom of the tank, and three edge pieces **64**, corresponding to the above described edges **51**, are welded to the inside of the tank bottom. A central spur **65**, corresponding to the separate spur **45** or extension **45** of the screw spindle **41** is likewise welded to the inside bottom of the tank **61**. As mentioned above, instead of using the extension **45** of the screw **41**, a separate spur is provided, as indicated at **66** of Fig. 6, it is intended to use the basic support construction either with or without tank.

For using the device according to the invention, the legs **10** are initially separated by rotating screw **41** such as to pull the toggle head **31** towards the spider **21**, or by pushing the legs apart with the screw end within the bushing **23** if a separate spur is used as indicated at **66** of Fig. 6. The object to be supported such as a Christmas tree O is then forcibly inserted with its bottom center on spur **45** and with its face on edges **51** or **64**. The screw **41** is then turned in the opposite direction, such as to separate spider and toggle head. This pushes the

pivots 36 outwardly and forces the claws 11 into the object. It will be noted the claws 11 are so shaped that this operation forces the edges 51 or 64 further into the bottom of the object to be supported. It is the purpose of these edges to hold the object from rotating around the vertical axis, which is a very important function in the use of such devices, because it prevents the supported object from rotating and being scratched by the claws 11 before the latter grips it firmly.

The holding device proper can be used with or without the tank, in which case the edges 51 and the spur 45 are not permanently attached to the spider but can be removed for replacement by the similar elements of the tank, if the latter is used.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A device for holding an elongate object comprising: a frame platform having a central hole and a plurality of peripherally located support pivot means; a plurality of clamping support members each having platform joint means pivoted on said support pivot means of the platform, each clamping support member having at its upper end an inwardly pointing claw portion, each clamping support member having at its lower end supporting leg portions, and each clamping support member having a toggle pivot bearing located between said platform joint means and said leg portion; toggle means including a hub with an internal thread in axial alignment with said platform hole and with a plurality of toggle pivot means located above said toggle pivot bearings, and a plurality of links each link being pivotally joined at one end to a respective one of said toggle pivot means of the hub and each link being pivotally joined at the other end to a respective one of said toggle pivot bearings of a respective clamping support member; and a screw extending through and engaging the thread of said hub and with a smooth end portion extending into said hole of said platform, and having a thrust face which rests against the underside of the platform; whereby said claw portions grip the object upon increasing the distance between platform and hub by operating the screw.

2. A device for holding an elongate object comprising: a frame platform having a central hole and a plurality of peripherally located support pivot means; a plurality of clamping members each having platform joint means pivoted on said support pivot means of the platform, each clamping member having at its upper end an inwardly pointing claw portion, each clamping member having at its lower end supporting leg portions, and each clamping member having a toggle pivot bearing located between said platform joint means and said leg portion; toggle means including a hub with an internal thread in axial alignment with said platform hole and with a plurality of toggle pivot means located above said toggle pivot bearings; links each pivotally joined at one end to a respective one of said toggle pivot means of the hub and each pivotally joined at the other end to a respective one of said toggle pivot bearings of a respective clamping member; a screw engaging and extending through said thread of said hub into said hole of said platform, and having a thrust face which rests against the underside of the platform; tank means resting on said platform; and prong members extending from the bottom of said tank means towards said claw portions for gripping the object between prong members and claw portions upon increasing the distance between platform and hub by operating the screw.

3. A device for holding an elongate object comprising: a spider frame made from three angular members defining a central hole and spaces between adjacent arms of the angular members, and having a bushing fastened in the hole; three S-shaped clamping supports pivotally fastened, with spaces therebetween, at intermediate swivel joints to the spider arms formed by said angular members, having at their upper ends inwardly directed claws and at their lower ends supporting leg portions; toggle means including a hub having an internal thread substantially in axial alignment with said spider frame hole and three radial pivot arms one for each of said swival joints and three links each pivoted at one end to one of said pivot arms and pivoted at the other end to pivot holes located on the corresponding clamping support below said pivot arms between its swivel joint and its leg portion; a screw extending through said thread of said hub, having a smooth end portion within said bushing of the spider frame, and a shoulder which rests against the underside of said bushing; tank means resting on said spider frame, bulging laterally into the spaces between said clamping supports, and having on the outside of its bottom ridges extending into said spaces between said arms of said angular members of the spider frame; and prong members extending from the bottom of said tank means towards said claws including a central spur and substantially radially extending edge members opposite said bottom ridges, for securing the object against swinging as well as rotation, gripping it upon forcing the hub away from the spider frame by turning the screw and forcing the claws into the object.

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