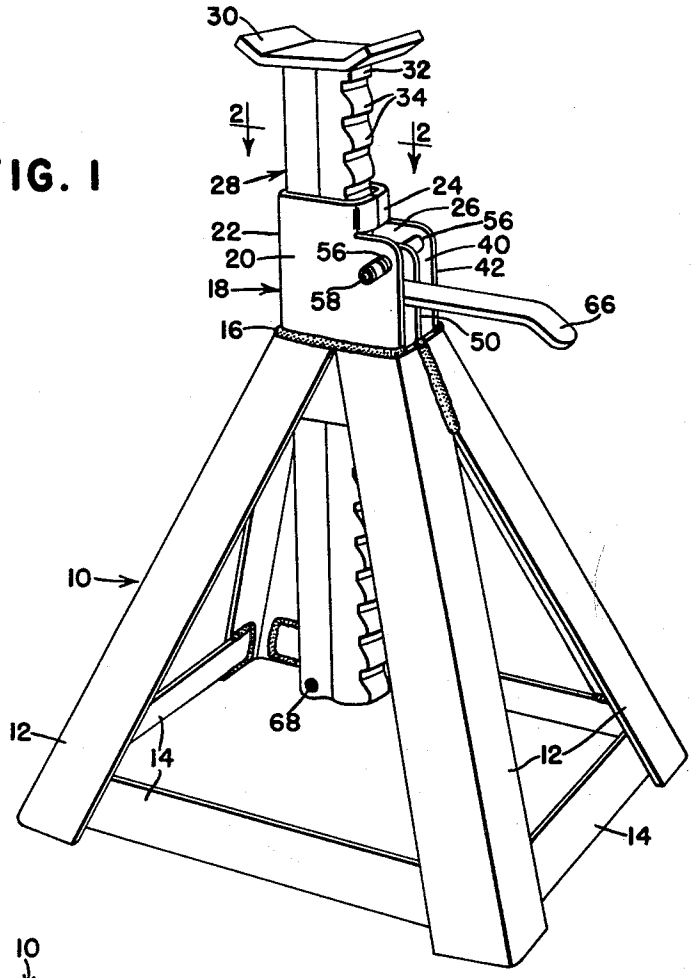
April 13, 1965 D. E. GOODALE 3,178,146

TRESTLE

Filed April 10, 1963 2 Sheets-Sheet 1

FIG. 1



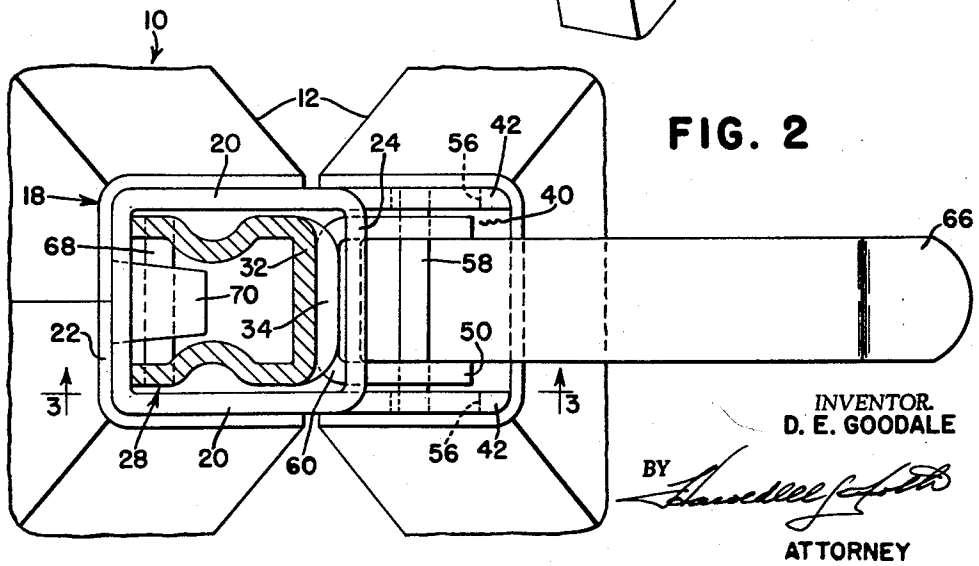


FIG. 2

INVENTOR.
D. E. GOODALE

BY

ATTORNEY

April 13, 1965 D. E. GOODALE 3,178,146

TRESTLE

Filed April 10, 1963 2 Sheets-Sheet 2

FIG. 3

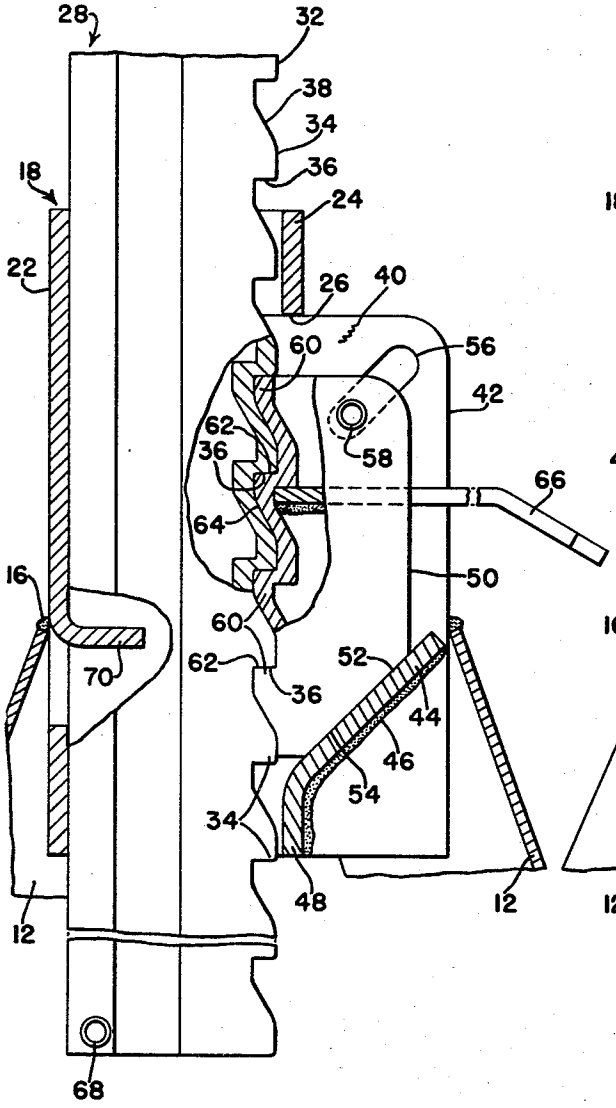
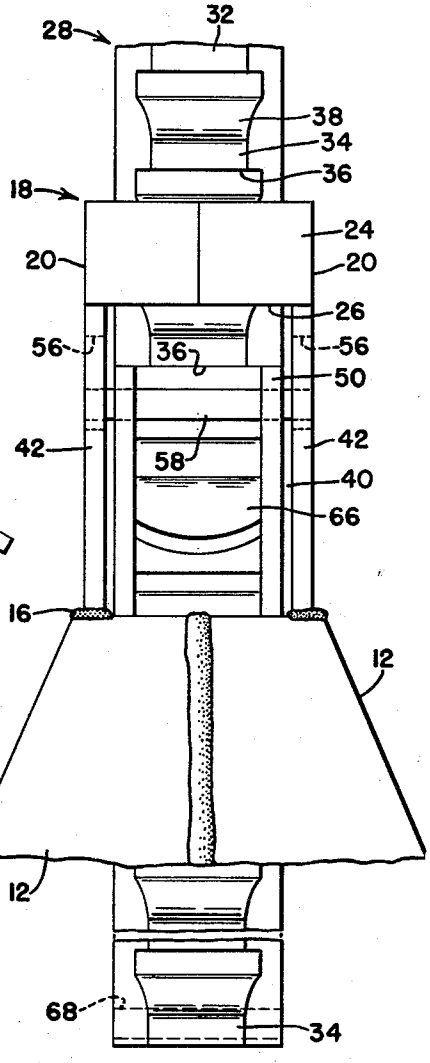


FIG. 4



INVENTOR.
D. E. GOODALE

BY

ATTORNEY

United States Patent Office 3,178,146 Patented Apr. 13, 1965

3,178,146

TRESTLE

Darrell E. Goodale, Davenport, Iowa, assignor to Ever-Tite Mfg. Co., Davenport, Iowa

Filed Apr. 10, 1963, Ser. No. 271,981
1 Claim. (Cl. 248—352)

This invention relates to a trestle of the vertically adjustable type such as are commonly used for supporting elevated structures such as motor vehicles and the like in storage, while being repaired, etc. More particularly, the invention relates to and has for its principal object the provision of improved locking means for positively preventing inadvertent or accidental collapse of the supporting column after once set in supporting position.

Various efforts have been made in the trestle art generally along these lines but so far no completely satisfactory means has been developed. Known devices fail because of defects in basic design, tendency to release because of minor maltreatment, difficulty in enabling deliberate release when required and so on. The improved design of the present invention eliminates these defects by a construction featuring a low-cost structure, ease of use and maintenance, multiple inter-engageable teeth between a dog and ratchet, properly designed cams and ramps insuring increased gripping under load, easy deliberate disengagement, maneuverability by combining a releasing device with a carrying handle, and improved stabilizing means for controlling, guiding and limiting movement of the locking dog.

The foregoing and other important objects and desirable features inherent in and encompassed by the invention will become apparent as a preferred embodiment is disclosed by way of example in the ensuing description and accompanying sheet of drawings, the figures of which are described below.

FIG. 1 is a perspective view of an adjustable trestle embodying the features of the invention.

FIG. 2 is an enlarged plan view, partly in section, as seen along the line 2—2 of FIG. 1.

FIG. 3 is a fragmentary side view, partly in section, as seen along the line 3—3 of FIG. 2.

FIG. 4 is a rear view of the structure shown in FIGS. 2 and 3.

The trestle selected for purposes of illustration on the basis of its present production and sale in commercial quantities has a generally pyramidal base 10 made up of a plurality of steel members such as angle bars 12 and braces 14, the bars converging to and being rigidly secured as by welding at 16 to a box-like structure 18 having opposite upright side walls 20, an upright front wall 22 spanning the side walls and rear wall means 24 including an opening 26 exposing the interior of said structure, which is here of rectangular section. This structure is of relatively substantial height to provide for adequate guiding and stabilization of an upright support member or column 28 which has at its top a suitable saddle 30 for engagement with such supported structures as may be encountered, e.g., vehicle axles, etc.

The member 28 is here shown as being a relatively high strength pressed steel element of channel section, open at its front and provided at its rear side or face 32 with a set of teeth 34, uniformly vertically spaced apart and each tooth being similar to another, each having a downwardly facing gripping ledge 36 and an upwardly and rearwardly facing cam face 38, it being understood of course that there is a cam face 38 between each pair of neighboring ledges 36. As will be seen best in FIG. 3, a plurality of teeth, in any selected position of the member 28, will be exposed rearwardly via the opening 26 to an adjoining pocket 40, which is here provided by integral rearward extensions of the side walls 20 to form a

pair of ears 42 that project rearwardly beyond the plane of the rear wall means 24. This pocket includes a closed bottom 44 formed of a separate steel part welded at 46 to and spanning the ears 42. The forward lower portion 48 of this bottom may be regarded as part of the rear wall means 24, being coplanar with the upper boundary of the opening 26 and cooperating therewith and with the other walls of the structure 18 to closely but movably confine the member 28 for vertical adjustment and additionally to afford adequate strength when the member 28 is locked in a selected position.

Selective locking of the member 28 is here achieved by a dog 50 closely confined by the pocket 40 and having limited vertical and fore-and-aft movement controlled by upper and lower angled means, the latter of which includes a ramp 52 on the bottom 44 and a cooperating sloped surface 54 on the bottom of the dog 50, and the former of which comprises cooperating guide elements respectively on the dog and on the ears 42; specifically, these guide elements include slots 56 in the ears and a pin 58 whose opposite ends enter and ride in the slots. The slots are parallel to the ramp 52, and both slope downhill toward the opening 26 and of course toward whichever plurality of member teeth 34 are exposed via the opening to the pocket 40, depending upon the vertical position of the member 28. Since the ramp 52 and slots 56 are vertically spaced and parallel, they serve a stabilizing function that prevents cocking of the dog and thus confine the dog to movement such as would be achieved by parallel linkage, which is of extreme significance, as will appear later.

The front of the dog has a plurality of teeth 60 which match or are complementary to the member teeth 34. Each tooth 60 has an upwardly facing gripping ledge 62, and a forwardly and downwardly facing cam face 64 intervenes between each pair of neighboring gripping ledges 62.

The dog is here shown as being of channel-section steel but, when equipped with a handle 66, rigidly secured thereto as by welding, has sufficient weight so that it gravitates downhill on the ramp 54 to automatically effect interengagement of the member teeth 34 and dog teeth 60. The ramp 54 and slots 56 are long enough in a downhill direction to enable the dog to move downhill without obstruction so that teeth interengagement is complete. It should be further noted that several teeth on the member are interengaged with several teeth on the dog. In the present situation, five teeth on each element are involved. Another characteristic here is that the gripping ledges 36 and 62 are horizontal or substantially so, whereby the force component is directly downwardly, and this reacts against the downhill effect of the ramp 52 and undersurface 54 of the dog to force the dog not only downwardly but also forwardly and into tighter engagement with the member 28. In other words, the greater the downward force or load on the member 28, the greater the locking action of the dog on the member, thus insuring against accidental release of the selected lock. The interlock is of such effectiveness that even though the handle 66 be accidentally jarred while the trestle is loaded, it is impossible to release the dog. In this regard, it will also be understood that the design is based on proper strength of materials etc. for the loads to be encountered, but the particular construction (angles, type of teeth etc.) permits the use of relatively light-weight steel, thus reducing the cost of the device while at the same time facilitating its use and ease of handling.

The purpose of the cam faces 38 and 64 respectively on the member and dog teeth 34 and 60 is to enable the member 28 to be moved easily upwardly in the absence of load or force on the saddle 30, the member cam faces 38 ratcheting past the dog cam faces 64 as the dog yields up-

wardly and rearwardly—or uphill—within the limits set by the rear ends of the slots **56** as engaged by the ends of the pin **58**, which limits are designed so that, if the handle **66** is used to manually move the dog uphill, the dog teeth will clear the member teeth and movement of the member **28** can be accomplished without ratcheting. Thus the height of the saddle may be easily set, and as soon as the dog is released, it will run downhill to establish mesh of its teeth with the associated teeth of the member. Further, because of the limits set by the slots **56**, the handle **66** may be used to carry the trestle, and in this case is properly located with respect to the center of gravity of the structure as to make carrying relatively easy.

Stop means is provided to prevent separation of the column or member **28** upwardly from the base. In this case, the lower end of the member **28** has a cross pin **68** between the webs of its sides, and a tab **70** is pierced from and bent rearwardly out of the front wall **22** of the structure **18**. The member **28** cannot of course escape downwardly from the base because the saddle will engage the top of the structure **18**.

Assembly of the unit is relatively easy, since the parts may be fabricated by production-line methods and assembled by inserting the member **28** into the structure **18**. After the lower end of the member passes the structure **18**, the pin **68** is installed. The handle **66** is pre-welded to the dog **50** and the dog installed in the pocket; and the guide pin **58** is passed through the slots **56** and through a hole drilled or punched in the dog. Reversal of the foregoing enables the stand or trestle to be disassembled.

Features and advantages other than those enumerated will readily occur to those versed in the art, as will many modifications and alterations in the preferred embodiment disclosed, all of which may be achieved without departure from the spirit and scope of the invention.

What is claimed is:

A trestle, comprising: a base having a box-like structure including spaced apart upright side walls and an upright front wall joined thereto, said side walls respectively having ears projecting rearwardly therefrom and providing a rewardly and upwardly opening pocket, upright rear upper wall means cross-connecting the side walls at the rear thereof and above the ears to give said structure an upper part of tubular cross-section forwardly of the pocket and leaving the pocket open at its top, and bottom means rigidly cross-connecting the ears at lower portions thereof and including a ramp inclined forwardly and downwardly and terminating in a downturned forward lip portion providing an upright transverse lower wall means in substantial vertical alinement with the rear wall means and giving said structure a lower part of comparable tubular cross-section spaced below said upper part to provide a rear opening communicating with said pocket; an upright vertically slidable member carried and guided by said parts and having a rear set of uniformly vertically spaced teeth selectively exposable to the pocket through said opening and said teeth being spaced apart less than the heights of said upper and lower wall means; a single locking dog in the pocket and closely confined by the ears and further having a bottom surface sloped according to the ramp and riding the ramp downhill and uphill respectively toward and away from the member, said dog having front tooth means engageable upon downhill movement of the dog with whichever member teeth are exposed at the opening, said ramp and bottom surface being at such angle that the weight of the dog causes downhill movement and tooth engagement and further so that downward force on the member increases tooth engagement; means including a pair of transversely alined slots in upper portions of the ears and at an angle parallel to that of the ramp and pin means carried by the dog and projecting at opposite ends into the slots for guiding the dog in addition to the ramp and for preventing removal of the dog from the pocket.

References Cited by the Examiner

UNITED STATES PATENTS

548,920	10/95	Joyce	248—407
1,794,052	2/31	Anderson et al.	248—352

FOREIGN PATENTS

305,984	1/31	Germany.

CLAUDE A. LE ROY, *Primary Examiner.*

FRANK L. ABBOTT, *Examiner.*