Dec. 16, 1958 C. W. GUERARD 2,864,584

VEHICULAR SUPPORT-BODY STABILIZING ASSEMBLY

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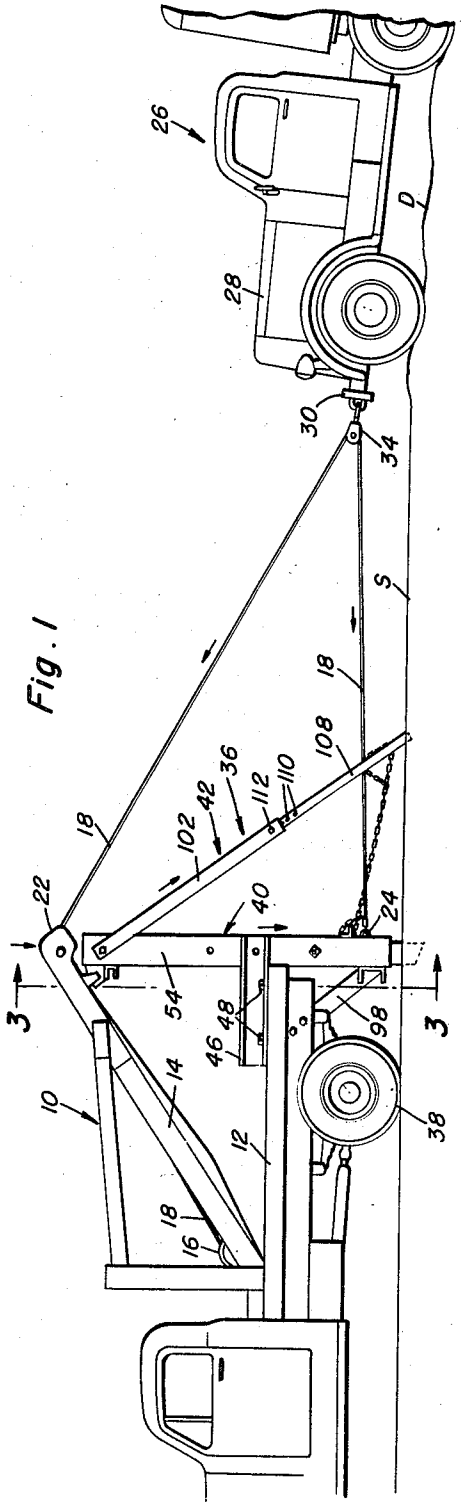


Fig. 1

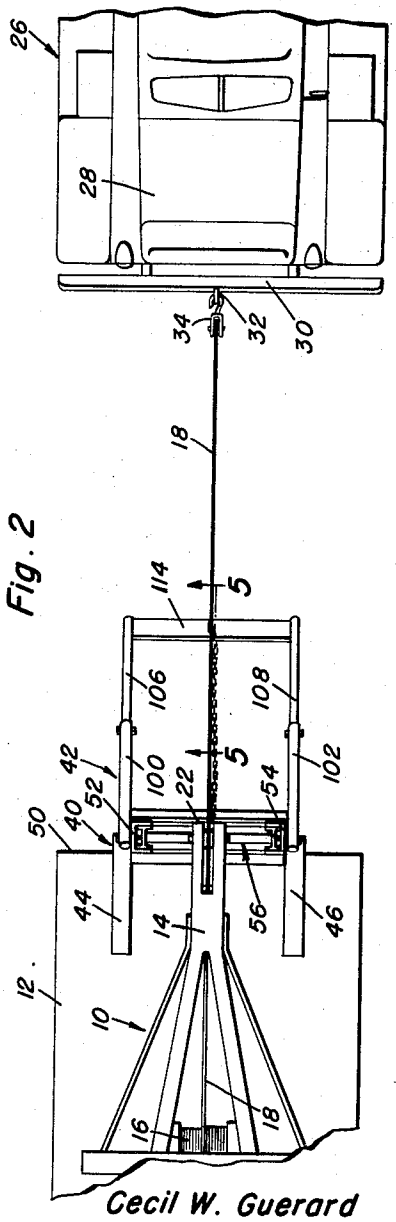


Fig. 2

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Fig. 3

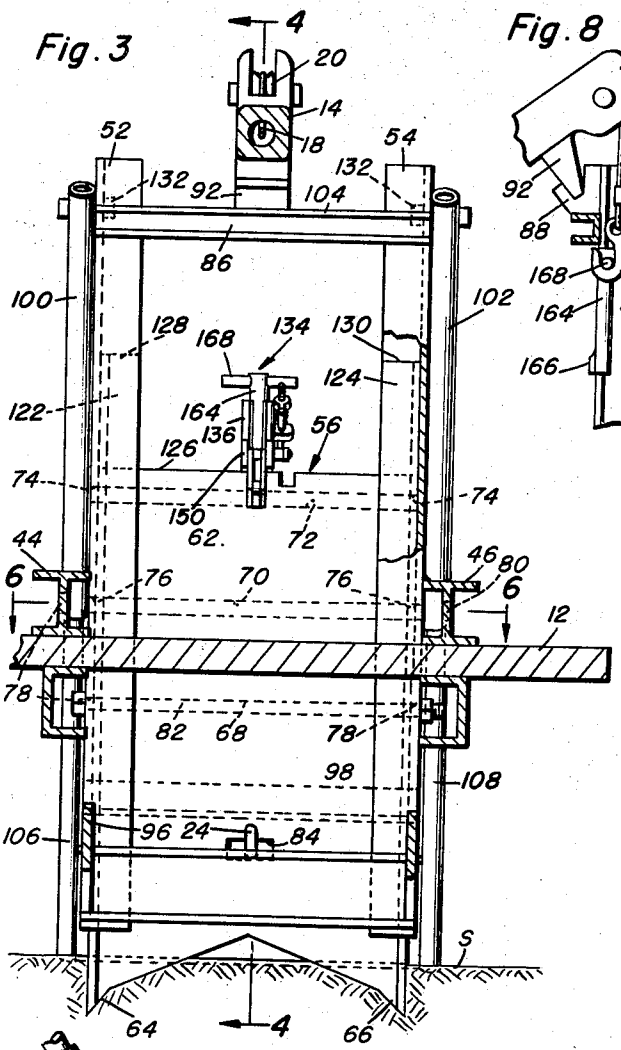


Fig. 8

Fig. 4

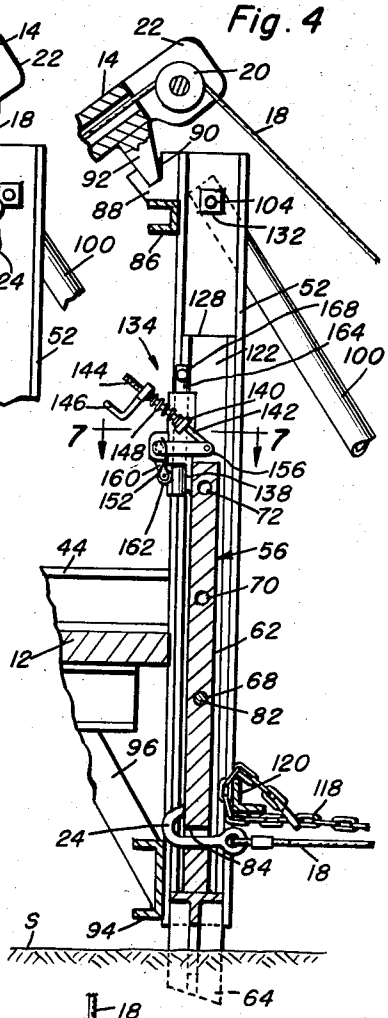


Fig. 5

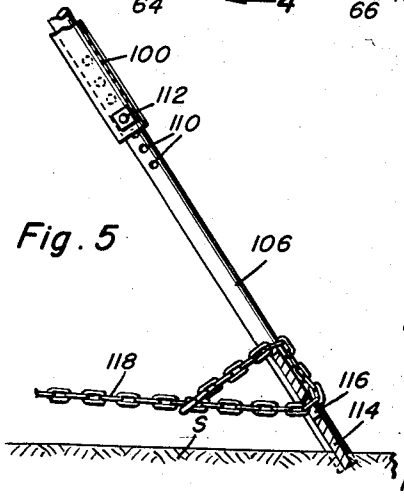


Fig. 7

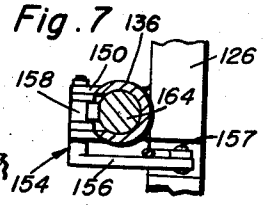
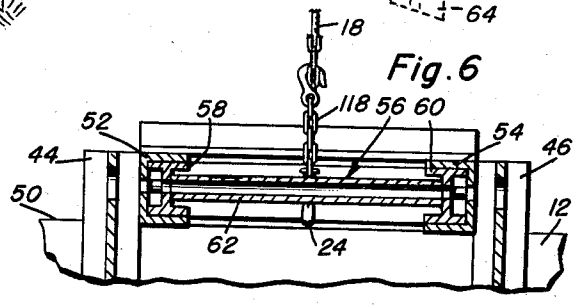


Fig. 6



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2,864,584

VEHICULAR SUPPORT-BODY STABILIZING ASSEMBLY

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Application March 16, 1956, Serial No. 572,151

2 Claims. (Cl. 254—139.1)

This invention relates generally to mobile units and is more particularly concerned with a stabilizer assembly for the support body of a vehicular crane commonly identified as a "wrecker" or "tow truck."

Heretofore, the removal of heavy trucks, dozers, etc. from ditches, after being stuck in heavy mud, etc. has necessitated heavy power equipment for the freeing thereof, and generally if an appreciable load is to be moved by the "wrecker" or "tow truck" there is usually required a pair of "tow trucks" operating in series wherein the forward "tow truck" is utilized as an anchor. Needless to say, the necessity for using plural pieces of such equipment involves increased expense, wear on equipment, etc. and is highly undesirable.

The primary object of invention is to provide a stabilizing assembly for mobile work units incorporating a support body having a crane boom, winch and force transmitting cable, wherein the stabilizing assembly includes a support frame reciprocably supporting an anchor leg positionable in a support surface due to the free falling thereof under its own weight, said frame incorporating a brace assembly extending into a support surface in spaced relationship from the anchor leg and preventing lifting of the forward end of the support body when force is applied on the force transmitting cable.

A further object of invention in conformance with that set forth above is to provide a stabilizing assembly of the character set forth which includes a releasable latch assembly supported on an upper portion of the anchor leg whereby the anchor leg is raised by force applied on the force transmitting cable to a predetermined position and wherein said anchor leg is automatically released to freely fall and penetrate a support surface upon which the mobile unit rests.

Another object of invention in conformance with that set forth above is to provide a support body stabilizing assembly of the character set forth which incorporates in the anchoring leg a ground penetrating portion and a lower connecting portion engageable with a hook element on the force transmitting cable wherein force is applied on the force transmitting cable which has been journalled in a block and tackle secured to a vehicle being moved by the work unit.

A still further object of invention in conformance with that set forth above is to provide a vehicular support body including a stabilizing assembly of the character set forth which is readily and economically manufactured, easily installed, used and maintained, and highly efficient and practical for the purposes intended.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the work unit or "tow truck" with the novel stabilizing assembly installed and showing the position of the force transmitting cable with respect to a vehicle being moved from a position in which it is stuck;

Figure 2 is a fragmentary top plan view of Figure 1;

Figure 3 is an enlarged vertical sectional view taken substantially on line 3—3 of Figure 1;

Figure 4 is a sectional view taken substantially on line 4—4 of Figure 3;

Figure 5 is an enlarged fragmentary sectional view taken substantially on line 5—5 of Figure 2;

Figure 6 is a sectional view taken substantially on line 6—6 of Figure 3;

Figure 7 is an enlarged fragmentary sectional view taken substantially on line 7—7 of Figure 4; and

Figure 8 is a fragmentary view similar to Figure 4 showing the alternate position of the parts when the latch assembly has been actuated to permit the anchor leg to freely fall for placement in the support surface on which the work unit rests.

Referring to the drawings, a work unit or tow truck is indicated generally at 10, said truck comprising a bed or frame 12 supporting thereon a suitable crane boom 14, a winch assembly 16, the winch assembly having connected thereto a flexible transmitting cable 18 which is journalled over a pulley member 20 which is suitably supported on a horizontal axis of rotation on the terminal end 22 of the crane 14. The flexible force transmitting cable 18 has suitably secured on the terminal end thereof a suitable hook element 24 utilized in a manner to subsequently become apparent.

Indicated generally at 26 is a truck-trailer rig which has become stuck in heavy mud, or in the ditch D, the tractor 28 of the truck-trailer including on its forward bumper portion 30 a suitable eye 32 through which a block and tackle pulley assembly 34 is engaged, it being noted that the force transmitting cable 18 is journalled in the block and tackle assembly 34 for the purpose of attaining the mechanical advantage afforded by having said flexible force transmitting cable journalled therein, the hook 24 on the end of the flexible force transmitting cable 18 being secured in a lower portion of the stabilizing assembly indicated generally at 36 in a manner to subsequently become apparent.

As seen in Figure 1, tension applied on the flexible force transmitting cable 18 in the absence of the stabilizing assembly 36 results in a downward pressure of force at the terminal end of the boom 22 tending to rotate the "tow truck" bed of the wheel assembly 38 tending to lift the forward end of the "tow truck" upwardly about the fulcrum of the wheel assembly 38. The stabilizing assembly 36 prevents aforementioned tendency of the truck bed 12 to tilt in a clockwise direction about the wheel assembly 38 as will subsequently become apparent.

The support assembly 36 includes a vertically extending frame 40 and a rearwardly extending angularly related brace assembly 42.

The support frame 40 includes a pair of horizontally disposed frame elements 44 and 46 which may have an I-beam configuration being suitably secured on the "tow truck" bed 12 in any suitable manner, for example by means of the fastening elements 48, said members 44 and 46 being transversely spaced on said bed 12 and having terminal end portions extending beyond the rear end edge 50 of the truck bed 12. The frame members 44 and 46 have secured thereto vertically extending rail members 52 and 54, respectively, being secured thereto in any suitable manner, for example by means of welding, said rail members 52 and 54 having a C-shaped cross section and extending both upwardly and downwardly with respect to the rear edges 50 of the truck bed.

An anchor leg assembly indicated generally at 56, is slidably supported between the rail members 52 and 54, said anchor leg member 56 including I-shaped vertical

edge portions **58** and **60** which are connected by means of a transverse web **62**, the lower ends of the anchor leg member **56** and the transverse web portion **62** terminating in a pair of spaced sharpened end portions **64** and **66**, as is clearly seen in Figure 3.

The web **62** of the anchor leg members **56** includes a plurality of transversely extending and vertically spaced passage portions **68**, **70** and **72** which may be aligned with transversely extending and oppositely disposed apertures extending through the webs of the vertical frame members **52** and **54** as indicated at **74**, **76** and **78**, the webs of the side frame members **44** and **46** having transversely extending apertures **79** and **80**, respectively, extending therethrough which are in alignment with the apertures **76**. A transverse lock rod **82** is extendable through the various aligned apertures and bore portions **68**, **70** and **72** for the purpose of retaining the anchor leg member **56** in various positions of adjustment relative to the truck bed **12** since the anchor leg **56** has the lower pointed portion **64** and **66** thereof inserted into the support surface S. The transverse web **62** of the anchor member **56** includes in a lower medial portion thereof a horizontally elongated slot portion **84** through which the hook **24** on the end of the flexible force transmitting member **18** may be inserted when the same is tilted horizontally. Thus after the anchor leg **56** has been placed in the position shown in Figures 3 and 4 the apparatus may be utilized as seen in Figure 1.

The vertical support members **52** and **54** have secured adjacent a top portion thereof in any suitable manner a transversely extending reinforcing element **86** which may have a block element **88** secured on an intermediate medial portion thereof, said block portion **88** including an upwardly opening slot portion **90** to which a key member **92** integrally secured on the train boom **14** may extend thus providing a substantially rigid support for the boom **14**, however, such structure is not necessary for the proper operation of the apparatus.

Including and suitably secured between lower portions of the support legs **52** and **54** is a transverse brace element **94** to which upwardly and forwardly extending brace elements **96** and **98** are suitably secured at their lower end portions, the upper end portions of the brace elements **96** and **98** being suitably secured in any suitable manner to a lower portion of the two truck frame.

The brace assembly **42** includes a pair of sleeve members **100** and **102** which are pivotally connected at their upper end portions to a rod member **104** extending transversely through opposite upper end portions of the support elements **52** and **54**. The sleeves **100** and **102** telescopically receive leg members **106** and **108**, respectively, said leg members incorporating a plurality of transverse apertures **110**, see Figure 1, extending therethrough which are alignable with a suitable aperture portion in the sleeves, and a suitable transverse retaining pin **112** will retain the legs in their adjusted position. The legs **106** and **108** have suitably secured at their lower end portions a foot element **114** which is engageable with the support surface S, as seen in Figure 1. The brace assembly **42** has the foot portion **114** thereof positioned in depending rearwardly extending relationship with respect to the anchor foot member **56** and thus the anchor foot member **56** together with the brace assembly **42** prevent the previously mentioned tendency of the tow truck to tilt about the rear wheel assembly **38**. The foot member **114**, see Figure 5, has an intermediately apertured portion **116** through which a spacing or safety chain **118** is threaded, said chain having an opposite end portion suitably secured to a transverse brace element **120** secured between a lower rearwardly facing portion of members **52** and **54**, as seen in Figure 4. Since the legs **106** and **108** have been adjusted the chain **118** is applied between the members **114** and **120** thus retaining a given spaced relationship between the anchoring leg **56** and the brace assembly **42**.

The portions **58** and **60** extend upwardly at **122** and **124**, see Figure 3, respectively of the upper edge **126** of the web or transverse portion **62** of the anchor leg **56**. The portions **122** and **124** are engageable at their top or upper edges **128** and **130**, respectively, with an abutment nut or lug **132** which may be conveniently mounted on the rod **104**. An automatically releasable latch assembly indicated generally at **134** is suitably secured on the upper edge **126** of the anchor leg member **56**, said latch assembly being of the character disclosed in the patent to Vanderloop, No. 2,659,288.

The latch assembly **134** includes a vertically extending tubular element **136** which is notched out at its lower portion at **138**, the element **136** including a laterally extending apertured ear element **140** which slidably receives a rod element **142**. The rod element **142** is threaded at its upper end **144** for accommodating an adjustment nut, at **146**, and a suitable compression spring **148** circumposed on the rod **142** between the nut **146** and the apertured ear **140** thus urging the rod in the direction indicated by the direction arrow in Figure 4. It will be noted that the adjustment nut **146** may be rotated on the rod **142** thus varying the compression applied on the spring **148** for a purpose to subsequently become apparent. The sleeve **136** includes a lower forwardly extending lug element **150** which pivotally supports a right angulated lever element **154** which includes a rearwardly extending portion **156** pivotally connected by a suitable pivot pin **157** at the lower end of the rod **142**. As most clearly seen in Figure 7, the lever **154** includes a forward portion **158**, said portion **158**, see Figure 4, includes a depending lug **160** having a cam roller **162** rotatably mounted thereon. A removable rod **164** is slidably supported in the sleeve **136**, said rod including on its lower end portion an abutment or camming surface element **166** which is engageable with the roller **162**, the upper portion of the rod **164** having a transverse lifting portion **168** with which the hook **24** of the force transmitting cable **18** is engageable, see Figure 8.

When the anchor leg **56** is raised toward the position shown in Figure 8, the upper edge portions **128** and **130** of the portions **58** and **60** of said anchor leg will engage the abutment portions **132** thereafter continued tension applying on the cable **18** results in urging portion **160** in the direction indicated by the direction arrow of Figure 4 whereafter the anchor leg **56** is free to fall under the force of gravity and the lower portions **64** and **66** will be urged into the penetrating position shown in Figures 3 and 4. After the anchor leg **56** is positioned as previously mentioned, the rod member **164** may be returned to the position shown in Figure 4 for future use, and the rod **82** may be inserted into position as shown in Figure 3. When the device is being transported the bore **68** of the anchor leg **56** may be aligned with the upper aperture portions **74** in the support members **52** and **54** and the retaining rod **82** may be inserted therethrough.

After the anchor leg **156** has been positioned as previously mentioned, the force transmitting cable **18** is journalled through the block and tackle **34** as previously mentioned with the hook **24** being in engagement with the aperture **84** in the anchor leg **56** after which tension is applied by means of the winch **16** and the vehicle **26**, or any material being moved, may be readily towed toward the tow truck, this job being accomplished by means of a single tow truck in a relatively safe and expedient manner.

Various positional directional terms such as "front," "rear," etc. are utilized herein to have only a relative connotation to aid in describing the device and are not intended to require any particular orientation with respect to any external elements.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention

to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a mobile work unit including a vehicular support body, a crane boom on the support body, the crane boom including an elevated terminal end portion, a winch assembly on said support body, a flexible force-transmitting cable operatively connected at one end to the winch assembly and including an intermediate portion journalled over the terminal end of the crane boom, a hook element secured at the other end of the force-transmitting cable; and a vehicular support body stabilizing assembly comprising a vertically extending support frame fixed on the support body disposed beneath the terminal end of the boom, an anchoring leg member reciprocably supported on the support frame for lifting and gravitating downwardly and including a lower end portion penetrable into a support surface by gravitation of the leg member, a brace assembly pivotally connected at an upper end portion of the support frame, the brace assembly including a lower end portion engageable with the support surface in spaced relationship from the lower

end portion of the anchoring leg member, the anchoring leg member including a lower connecting portion engageable with the hook element on the force-transmitting cable for providing an anchor for the cable when it is journalled through a block and tackle assembly connected to material or a vehicle being moved by the work unit, said support body stabilizing assembly including a releasable latch assembly carried on an upper edge portion of the anchoring leg member, said latch assembly engageable with the hook element on the force transmitting cable whereby the anchoring leg member may be lifted, and means for automatically releasing the latch assembly in response to lifting of the leg member.

2. The combination of claim 1, said last named means comprising an abutment member on said support frame engageable by said latch assembly in response to lifting of said leg member.

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