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Branham et al.

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[45] **Aug. 28, 1973**

[54] **TRANSPORTABLE DRILLING MAST SUBSTRUCTURE WITH ELEVATABLE DRAWWORKS**

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[52] **U.S. Cl.** **52/115,** 52/116, 52/143, 180/9.48

[51] **Int. Cl.** **E04h 12/34**

[58] **Field of Search** ..... 180/9.48, DIG. 2; 280/34 A; 296/27; 52/111, 116, 143, 115, 120, 119

[56] **References Cited**

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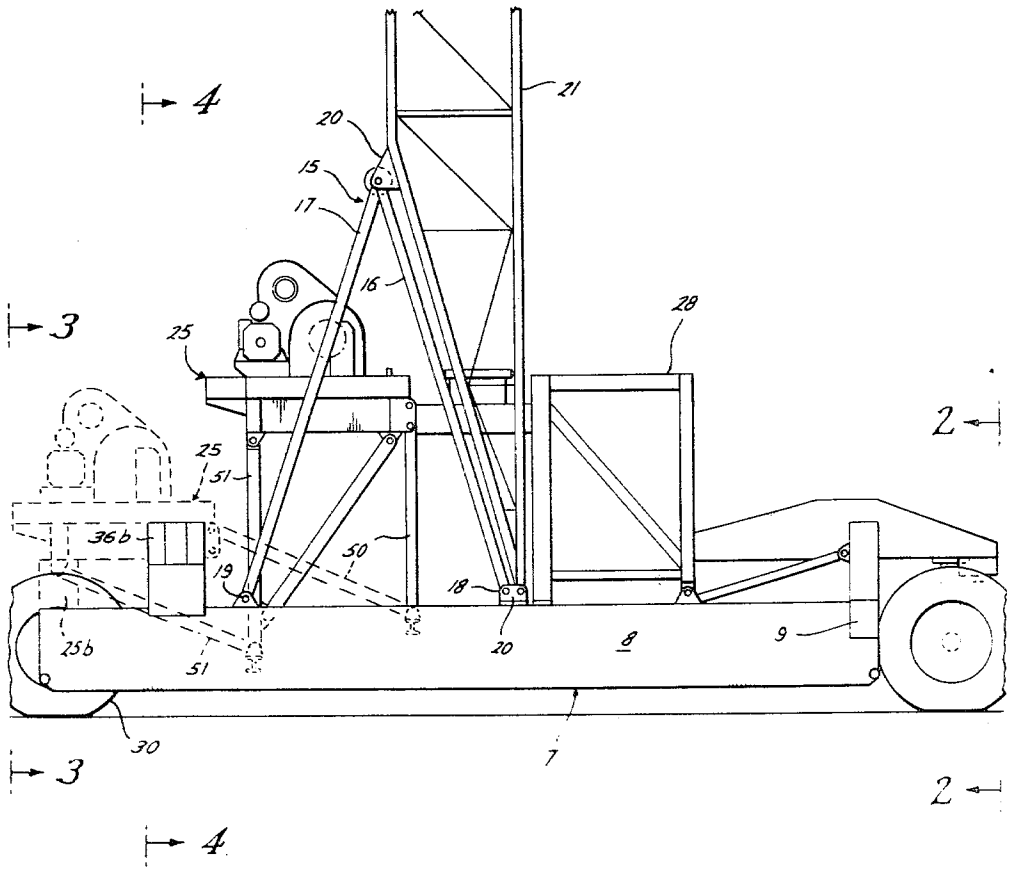
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Primary Examiner—Price C. Faw, Jr.
Attorney—Jack W. Hayden

[57] **ABSTRACT**

A transportable support structure for a drilling mast and drawworks includes spaced longitudinally extending members with lateral brace members extending therebetween to provide a support structure for a gin pole support and a drilling mast as well as an elevatable drawworks support structure which is pivotally secured to the transportable support structure. Support means are provided for supporting the elevatable drawworks support in an intermediate position between retracted position on the support structure and elevated position to enable the support structure, drilling mast and drawworks to be moved from one location to another.

2 Claims, 5 Drawing Figures



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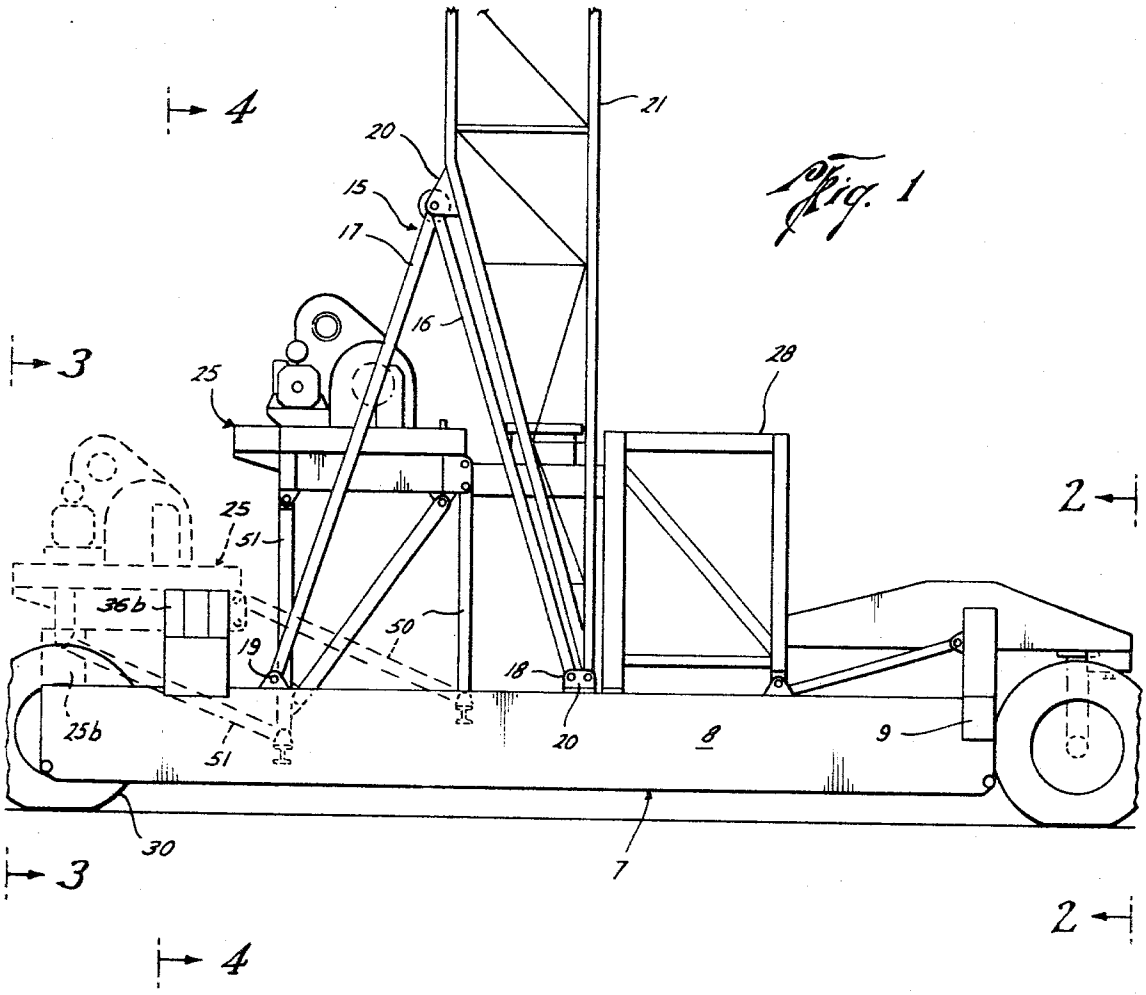
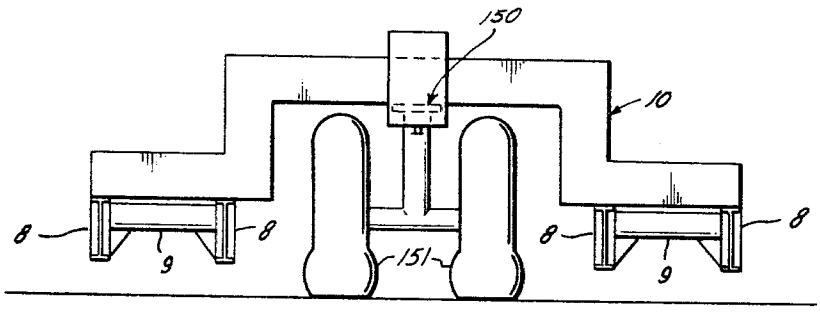


Fig. 1

Fig. 2



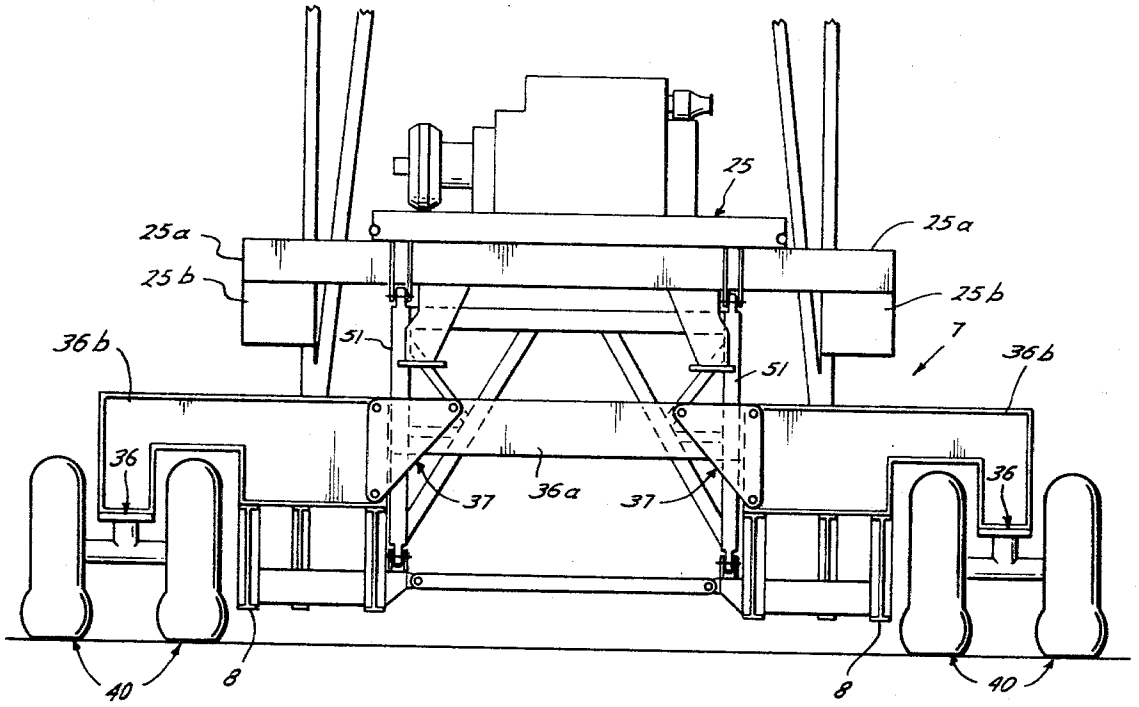
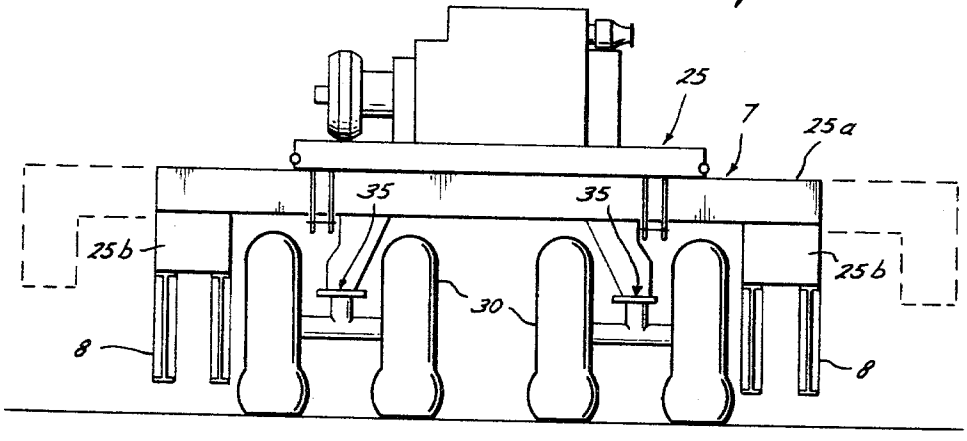

25
25a
25a
25b
25b
36b
36b
51
51
7
36
36
37
36a
37
40
8
8
40

Fig. 4

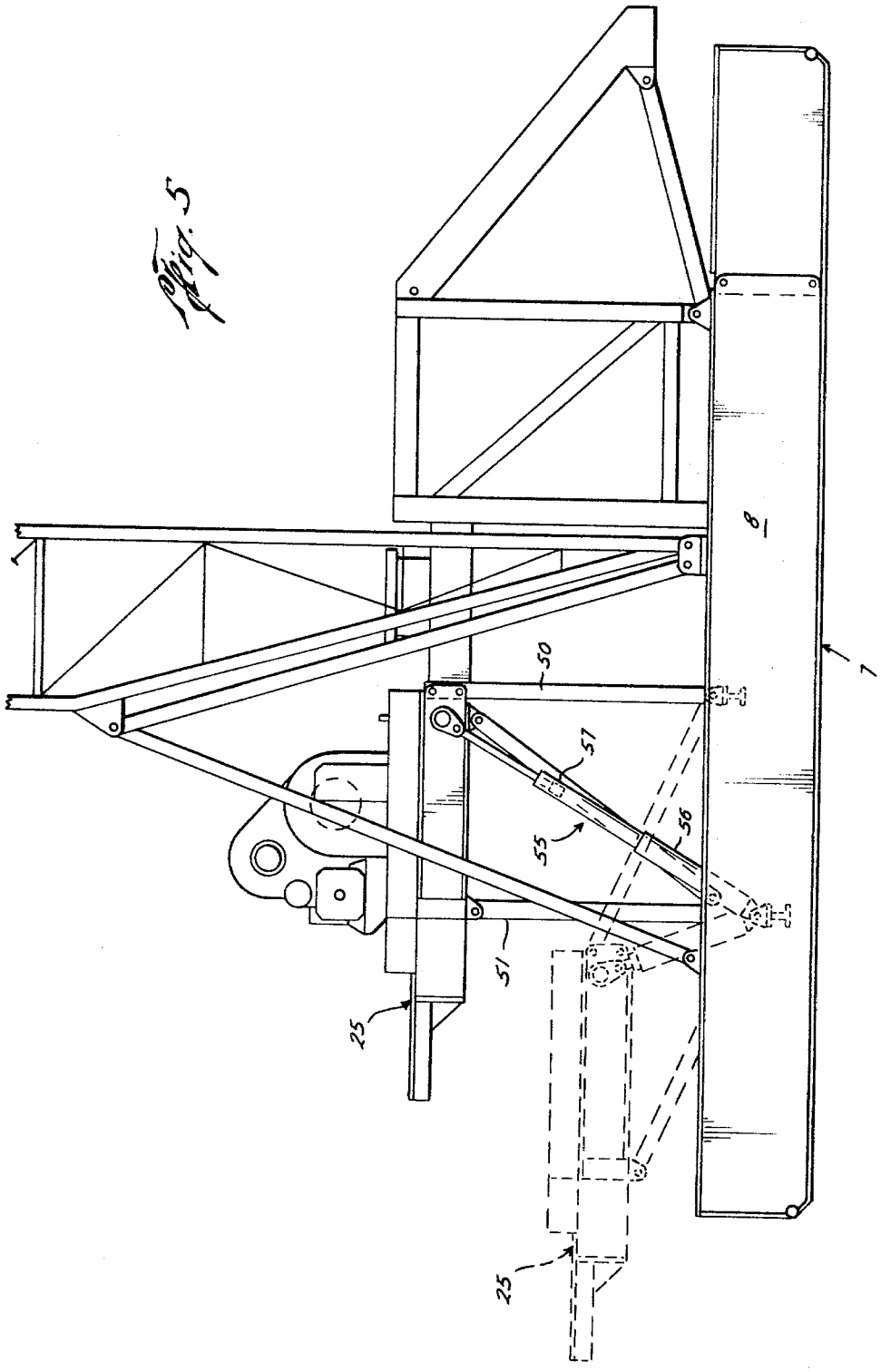
Fig. 3


25
7
25a
35
35
25b
25b
30
8
8

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Fig. 5



TRANSPORTABLE DRILLING MAST SUBSTRUCTURE WITH ELEVATABLE DRAWWORKS

SUMMARY OF THE INVENTION

The present invention is intended to provide a support arrangement for moving a drilling mast and drawworks mounted on such support structure from one location to another. It includes an arrangement so that the drawworks is pivotally carried on the support structure and may be lowered to an intermediate position between retracted position on the support structure and elevated position on the support structure when it is desired to move the support structure.

Also, the support structure is provided with means for supporting wheels either inboard or outboard of the structure, depending upon whether the support structure is to be moved along a road, or moved from one field location to another.

Another object of the present invention is to provide a transportable support structure for a drilling mast and drawworks wherein the drawworks is elevatably supported on a support structure with hydraulic cylinder and piston means connected between the drawworks support structure and the transportable support structure for elevation of the drawworks to an elevated position and retraction from such elevated position when desired.

Other objects and advantages of the present invention become more apparant from a consideration of the following description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side schematic view illustrating the transportable support structure with wheels mounted inboard of longitudinally extending members on the support structure, the drawworks in intermediate elevated position in dotted line and in full elevated position in solid line with the gin pole arrangement for supporting the mast on the transportable structure;

FIG. 2 is a front end elevation illustrating the transportable support structure supported on dollies for movement thereof;

FIG. 3 is an end view of FIG. 1 showing the elevatable drawworks in solid line in intermediate elevated position;

FIG. 4 is an end view illustrating the relationship of the outboard wheels to the transportable support structure for movement thereof with the mast and drawworks in elevated position; and

FIG. 5 is a view similar to FIG. 1 illustrating the hydraulic cylinder and piston arrangement for elevating and lowering the elevatable drawworks support structure.

Attention is first directed to FIG. 1 of the drawings wherein a transportable support structure is referred to generally by the number 7. Such structure includes spaced longitudinal, generally horizontally extending members 8 which are provided with suitable bracing therebetween as shown at 9, and also provided with suitable bracing referred to generally by the numberal 10 in FIG. 2 to provide rigidity and structural strength to the transportable support structure 7. It can be appreciated that any suitable number of laterally extending brace means 9 and 10 may be provided to accomplish this purpose.

Gin pole means referred to generally at 15 is mounted on the support structure 7 and comprises legs 16 and 17 pivotally secured at 18 and 19 respectively to the support structure 7 and extend upwardly therefrom to be joined at their upper ends as shown in FIG. 1. Gin pole means is provided on each side of the support structure 7 in spaced relation and is provided with suitable means 20 for connecting with the mast 21 to support it when erected. The mast is further supported by the support means 20 which also may carry the legs 16 of each of the gin pole means 15.

In FIG. 1 an elevatable drawworks support is referred to generally at 25 and is shown in dotted line in an intermediate position and in full line in a full elevated position.

When it is desired to move the transportable support structure over a road, the mast 21 is lowered and removed from the transportable support structure 7. The drawworks 25 is then lowered to the intermediate dotted line position shown in FIG. 1, the structure 7 is then jacked up and the dollies represented at 30 as better illustrated in FIG. 3, are positioned under the jacked-up transportable structure 7 so that it may be moved over a road. It will be noted that the transportable structure 7 includes a suitable fifth wheel arrangement referred to at 35 for carrying the dollies 30 inboard of the longitudinally extending means 8. Similarly, the support structure 7 is provided with a fifth wheel means referred to generally at 36 so that dollies 40 may be carried outboard of the longitudinally extending members 8, for a purpose as will be described.

The elevatable drawworks support structure 25 includes the legs 50 and 51 which are pivotally connected at one end to the support structure 7 to enable the drawworks support structure 25 to be moved from its lowermost position on the support structure 7 up to full elevated position, and back down to either an intermediate position or to the full retracted position as will be described.

To accomplish such result, it will be noted that the elevatable support structure 25 includes suitable brace beam 25*a* connected therewith. The brace beam 25a is provided with a downwardly extending projection 25b adjacent each end for resting on the longitudinally extending means 8 while retaining the drawworks support structure 25 in suitable elevated position for clearance therebetween and the dollies 30 when the structure is jacked up and the dollies 30 positioned thereunder.

It will be noted that the fifth wheel arrangement 36 for outboard dollies 40 is located forward of the fifth wheel arrangement 35 for the inboard dollies 35 and thus is closer to the gin pole means 15 than are the inboard dolly supports 35. Therefore, to enable the beam 25*a* and the dolly supports 35 carried thereby to move to the intermediate position, the transportable support structure 7 is provided with a removable brace 36*a* adjacent the central part thereof which connects at each end with the extensions 36*b* mounted on support structure 7 as better seen in FIG. 4. The central brace 36*a* may be secured to the outwardly extending portions 36*b* by any suitable means such as the connecting arrangement referred to generally at 37 comprising a plate with bolts securing it to support structure 7 and removable beam 36*a*. It can be appreciated that the outwardly extending portion 36*b* are permanently secured in place to the longitudinally extending beams 8

of the transportable support structure 7 and remain in position at all times.

Thus, when it is desired to lower the elevatable drawworks support structure 25 from the elevated position illustrated in FIG. 4 to the intermediate position illustrated in FIG. 3, the central beam 36*a* between the extensions 36*b* is removed whereupon clearance is provided for movement of the legs 50 and 51 of the elevatable drawworks support structure between the extensions 36*b* so that the downwardly extending projection 25*b* of beam 25*a* may rest on the longitudinally extending beams 8 as shown in FIG. 3. If desired, the downwardly extensions 25*b* may be secured to the beam 8 by any suitable means such as bolts or the like.

The front end of the transportable support structure is also provided with a pivotal arrangement referred to generally at 150 in FIG. 2 for support of the dollies 151 thereon.

In FIG. 5, the support structure 7 is again referred to and is shown as including the longitudinally extending beams 8. The elevatable drawworks support structure is again referred to at 25 in dotted line as well as being shown in full line view at 25. Legs 50 and 51 are again provided which are pivotally connected to the transportable support structure and the elevatable drawworks structure 25, and in addition a suitable hydraulic cylinder and piston arrangement is provided as illustrated generally at 55. Such arrangement includes telescoping hydraulic cylinders 56 which are provided with piston means 57 therein so that when hydraulic fluid is supplied to act on the piston 57, the telescopic cylinders are extended and the piston urged outwardly until the elevatable drawworks structure reaches its elevated position. It can be lowered either to full retracted position on the support structure or to the intermediate position described hereinbefore by releasing the hydraulic fluid from the hydraulic cylinder in a manner well known in the art.

When it is desired to lower the elevatable drawworks structure 25 onto the transportable structure 7, the downwardly extending projections 25b are removed whereupon the beam 25*a* will extend between and rest upon longitudinal beam 8 of such transportable support structure.

What is claimed:

1. A transportable support structure for a drilling mast and drawworks comprising:
   a. a support structure including:
      1. spaced, longitudinally extending members;
      2. lateral brace members secured to and extending between said longitudinally extending members;
   b. gin pole means secured to said support structure;
   c. mast support means secured to said support structure;
   d. an elevatable drawworks support structure pivotally secured to said support structure adjacent said gin pole support means;
   e. means on said support structure for supporting said drawworks support structure in retracted position thereon;
   f. support means for supporting said elevatable drawworks support in an intermediate position between retracted position and elevated position on said support structure; and
   g. wheel support means secured to said support structure inboard and outboard of said spaced, longitudinally extending members.

2. The invention of claim 1 wherein said elevatable drawworks support structure includes hydraulic cylinders and piston means therein whereby hydraulic fluid supplied to said cylinders act on said piston means therein to effect raising and lowering of said elevatable drawworks support structure.

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