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OIL WELL MAST GIN POLE

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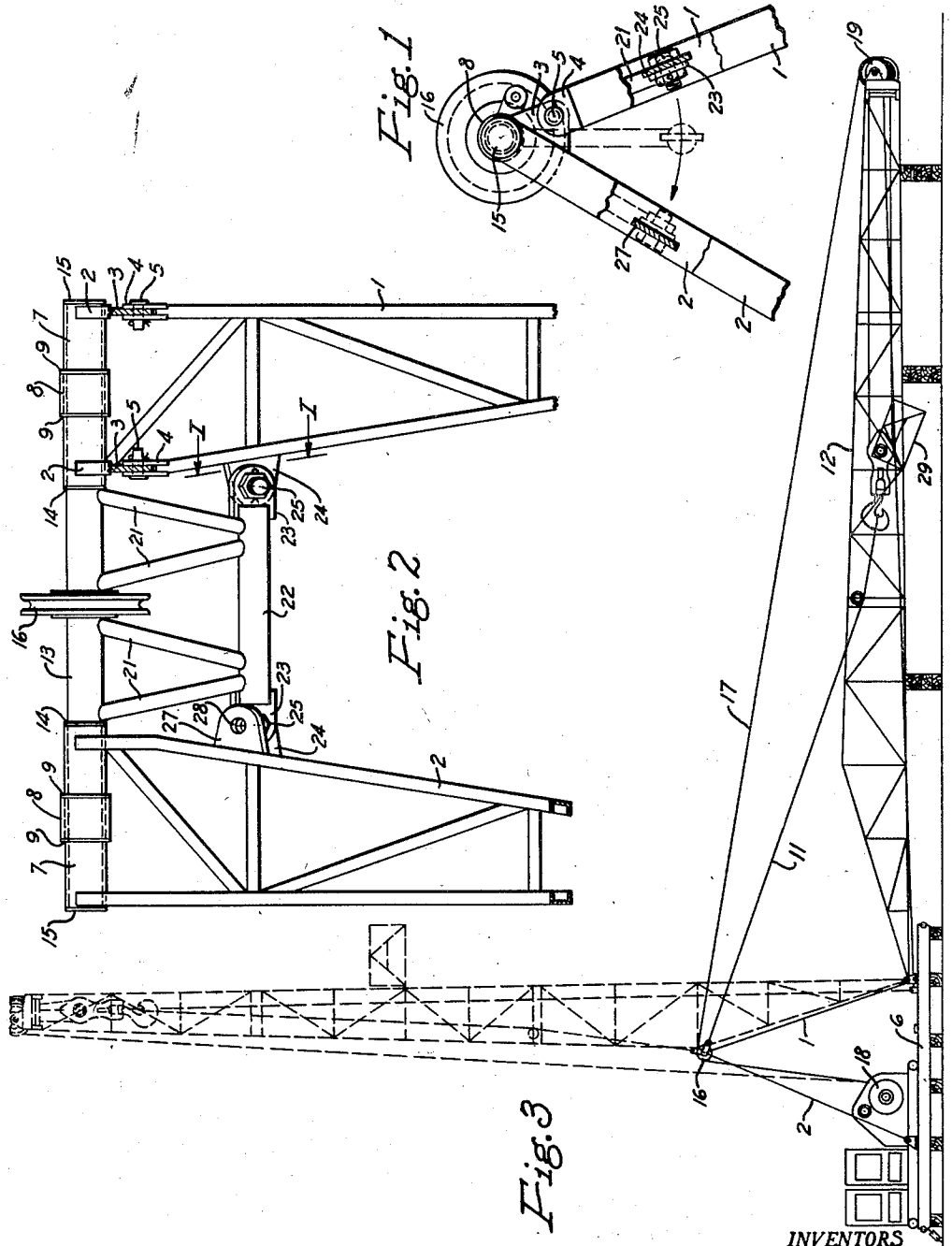


Fig. 1

Fig. 2

Fig. 3

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OIL WELL MAST GIN POLE

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This invention relates to upwardly tapered gin poles that are used in raising and lowering portable oil well masts, and more particularly to those that remain in position as a part of or close to the upright mast.

The gin pole with which this invention is concerned is the type that has laterally spaced front legs and laterally spaced rear legs, with the upper ends of the front legs connected to the rear legs but with their lower ends spaced wide apart. Such a gin pole therefore has inclined front and back sides, or one side inclined and the other side vertical. It supports cables that are used in swinging a reclining mast up to upright position. In most cases the gin pole then becomes a part of the upright mast and helps to support it, although in some instances the mast stands on its own four feet and is not connected to the gin pole. Because the front legs of the gin pole are under compression while a mast is being raised, it is customary to connect their upper portions with a truss. After the mast has been raised and put in operation, this truss is likely to be in the line of vision of the drawworks operator, who must watch the traveling block moving up and down in the mast. Also, in the more general case where the gin pole forms a part of the erected mast, the trussed front side of the gin pole serves no particular function after the mast is upright, but the untrussed rear side of the gin pole is under compression so that the rear legs have to be made heavy enough to take the load.

It is among the objects of this invention to provide a gin pole in which the back legs need not be made as strong and heavy as heretofore, in which the truss that normally connects the front legs of the gin pole can be used for bracing the rear legs after the mast is raised, and which provides for an improved field of vision for the drawworks operator.

In accordance with this invention the truss in the upper part of the gin pole has a top longitudinal member which is pivotally supported on a horizontal axis so that the truss can be swung from a position between the front legs to a position between the rear legs. Means are provided for detachably connecting the bottom of the truss to the front legs, and means also are provided on the rear legs for connection to the bottom of the truss when it is swung back to them. Preferably, the top longitudinal member of the truss connects the legs at the opposite sides of the gin pole and is rotatable on its own axis. In its front position the truss serves its customary purpose, but in its rear position it reinforces the rear legs of the gin pole and also leaves the space between the upper portions of the front legs unobstructed so that the drawworks operator can see up into the mast better.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which

Fig. 1 is an enlarged side view of the upper part of the gin pole, with parts broken away;

Fig. 2 is a rear view of the upper part of the gin pole, with one of the back legs broken away; and

Fig. 3 shows diagrammatically how such a gin pole may be used for raising a mast.

Referring to the drawings, the gin pole has a pair of laterally spaced front legs **1** and a pair of laterally spaced rear legs **2**. The legs are built up from structural steel members and taper downward from wide tops. The upper ends of the rear legs are provided with forwardly extending vertical plates **3**, each of which is straddled by a fork **4** on the upper end of a front leg. The forks and plates are provided with aligned holes, in which pivot pins **5** are mounted so that the front and the rear legs can be swung toward each other to fold the gin pole when it is not in use. When the gin pole is in operating position, each connected pair of legs diverge downward as shown in Figs. 1 and 3 and have their lower ends mounted in any suitable manner on a support **6**. Rigidly mounted at the top of each rear leg is a horizontal sleeve **7**. The two sleeves are disposed with their axes in alignment. An anchor bracket **8** may be rotatably mounted on the center of each sleeve between collars **9** for attachment to the ends of a sling line **11** (Fig. 3) used in raising and lowering a mast **12**.

It is a feature of this invention that the truss which connects the upper parts of the front legs of the gin pole includes a top member or chord which extends lengthwise of it and is pivotally supported on a horizontal axis. Preferably this member is a cylindrical pipe **13** (Fig. 2), the opposite ends of which extend into and are journaled in the two sleeves **7**. To hold the upper chord in the sleeves at all times, it is provided with collars **14** at the inner ends of the sleeves and with circular plates **15** secured to its outer ends and overlapping the outer ends of the sleeves. These collars and plates prevent the sleeves from moving lengthwise on the upper chord of the truss. Journaled on the center of this truss member is a sheave **16**, over which the fast line **17** (Fig. 3) extends from the drawworks **18** to the crown block **19** of the mast.

The top chord of the truss is connected by the usual inclined braces **21** to a bottom longitudinal member or chord **22**, the opposite ends of which are connected to the front legs **1** of the gin pole a short distance below their upper ends. This preferably is done by welding a longitudinally extending splice plate **23** to each end of the bottom chord and welding similar plates **24** to the inner sides of the front gin pole legs in positions to overlap and engage the front surfaces of the truss splice plates. The overlapping pairs of splice plates are provided with aligned holes, through which bolts **25** extend for fastening the lower part of the truss tightly to the front gin pole legs.

The gin pole described thus far is conventional in general construction, in that the upper ends of the front legs are connected by a truss, while the rear legs have no such truss. According to this invention, however, the bottom of the truss can be disconnected from the front legs and then the entire truss can be swung backward, due to the novel pivotal mounting of the top of the truss. When the truss is swung backward in this manner the splice plates **23** at its bottom are brought into engagement with the front surfaces of splice plates **27** connected to the inner sides of the rear legs **2** in the same manner as the front splice plates **24**. These rear splice plates have holes **28** aligned with those in the truss splice plates, and the bolts **25** are inserted in the holes to tightly connect the bottom of the truss to the rear legs, as indicated by the inclined broken line position of the truss in Fig. 1. This results in the rear legs being braced by a truss while the front legs are free of the truss.

The advantages of this two position swinging truss are that it can be swung out of the normal line of vision of the drawworks operator while he is running the traveling block up and down the mast and watching the derrickman on the racking platform **29** and the gin pole

legs which require bracing at any given time can be braced by the truss. Thus, while the mast in Fig. 3 is being raised, the front legs 1 of the gin pole are in compression and are braced by the truss attached to them in its forward position. At this time the rear gin pole legs 2 are in tension and require no lateral support. After the mast has been raised and seated against the gin pole, the rear gin pole legs become compression members which can be braced by the truss in its rear position, because it no longer is needed between the front legs that cease to take the load. The use of the truss to reinforce the back legs of the gin pole permits them to be made of lighter construction than otherwise would be the case.

According to the provisions of the patent statutes, we have explained the principle of our invention and have illustrated and described what we now consider to represent its best embodiment. However, we desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

We claim:

1. An oil well mast gin pole comprising laterally spaced front legs and laterally spaced rear legs, means connecting the upper end of each front leg to the upper end of the leg behind it, each pair of connected legs diverging downward, a truss between the upper portions of said pairs of legs and having a top longitudinal member, means pivotally supporting said member on a horizontal axis to permit the truss to be swung from a position between said front legs to a position between said rear legs, means for detachably connecting the opposite ends of the bottom of the truss to the front legs, and means on the rear legs for connection to the bottom of the truss when it is swung back to them.

2. An oil well mast gin pole comprising laterally spaced front legs and laterally spaced rear legs, means connecting the upper end of each front leg to the upper end of the leg behind it, each pair of connected legs diverging downward, a truss between the upper portions of said pairs of legs and having a top longitudinal member connected to them for rotation on its axis to permit the truss to be swung from a position between said front legs to a position between said rear legs, the truss having a bottom longitudinal member and braces connecting said top and bottom members, means for detachably connecting the opposite ends of the bottom member of the truss to the front legs, and means on the rear legs for connection to the bottom member of the truss when it is swung back to them.

3. An oil well mast gin pole comprising laterally spaced front legs and laterally spaced rear legs, means connecting the upper end of each front leg to the upper end of the leg behind it, each pair of connected legs diverging downward, axially aligned sleeves rigidly mounted on the upper ends of said pairs of legs, a truss between the upper portions of said pairs of legs and having a top longitudinal member journaled in said sleeves to permit the truss to be swung from a position between said front legs to a position between said rear legs, means for detachably connecting the opposite ends of the bottom of the truss to the front legs, and means on the rear legs for connection to the bottom of the truss when it is swung back to them.

4. An oil well mast gin pole comprising laterally spaced front legs and laterally spaced rear legs, means connecting the upper end of each front leg to the upper end of the leg behind it, each pair of connected legs diverging downward, axially aligned sleeves rigidly mounted on the upper ends of said pairs of legs, a truss between the upper portions of said pairs of legs and having a top longitudinal member extending through said sleeves, means mounted on said member at opposite ends of each sleeve to hold it therein, said member being rotatable in the sleeves to permit the truss to be swung from a position between said front legs to a position between said rear legs, the truss having a bottom longitudinal member and braces connecting said top and bottom members, means for detachably connecting the opposite ends of the bottom member of the truss to the front legs, and means on the rear legs for connection to the bottom member of the truss when it is swung back to them.

5. An oil well mast gin pole comprising laterally spaced front legs and laterally spaced rear legs, means connecting the upper end of each front leg to the upper end of the leg behind it, each pair of connected legs diverging downward, a truss between the upper portions of said pairs of legs and having a top longitudinal member, means pivotally supporting said member on a horizontal axis to permit the truss to be swung from a position between said front legs to a position between said rear legs, the bottom of the truss having openings through its opposite ends, said front legs having perforated members in front of said openings, and removable fasteners extending through said perforated members and openings to detachably connect the bottom of the truss to the front legs, said rear legs being provided with perforated members to receive removable fasteners extending through said truss openings for detachably connecting the bottom of the truss to the rear legs when it is swung back to them.

6. An oil well mast gin pole comprising laterally spaced front legs and laterally spaced rear legs, means connecting the upper end of each front leg to the upper end of the leg behind it, each pair of connected legs diverging downward, a truss between the upper portions of said pairs of legs and having a top longitudinal member and a bottom longitudinal member connected by braces, means for detachably connecting the opposite ends of the bottom member to the front legs, said bottom member and braces being swingable from the front legs back to the rear legs, and means on the rear legs for connection to the opposite ends of said bottom member when it is swung back to them.

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