July 15, 1958 H. J. WOOLSLAYER ET AL 2,843,229

FOLDING GIN POLE

Filed March 12, 1954 3 Sheets-Sheet 1

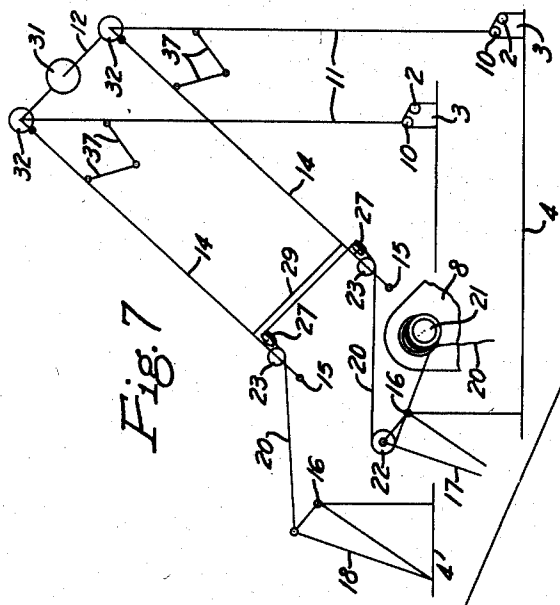


Fig. 7

Fig. 1

INVENTORS
HOMER J. WOOLSLAYER,
CECIL JENKINS,
CALVIN L. TURNER &
ERWIN A. CAMPBELL

BY

Brown, Critchlow, Flick & Peckham

THEIR ATTORNEYS

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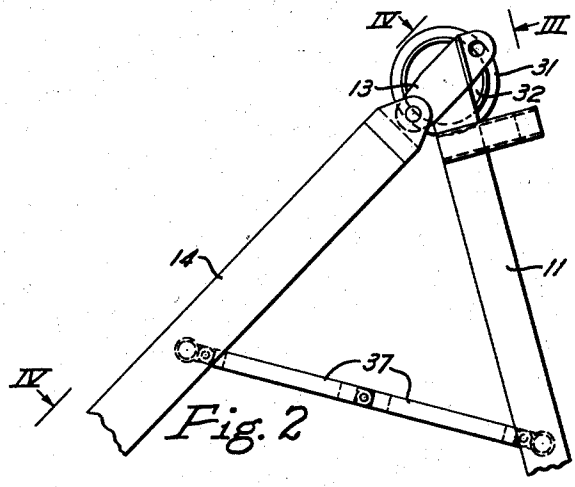


Fig. 2

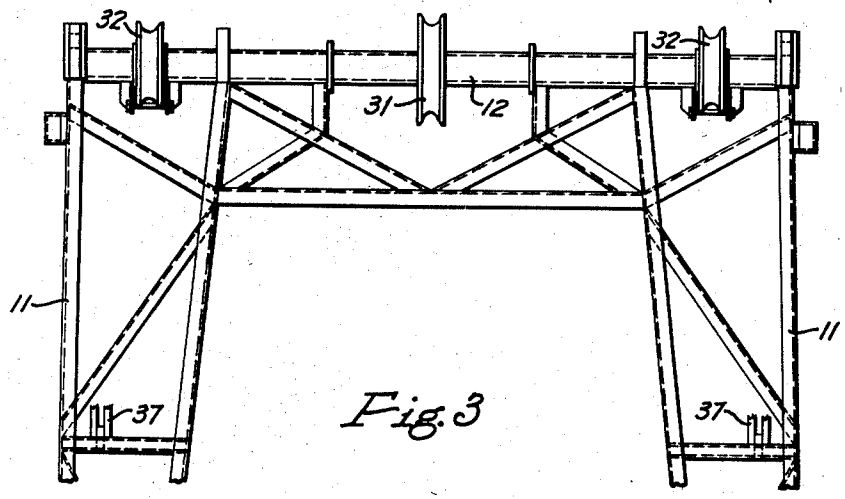


Fig. 3

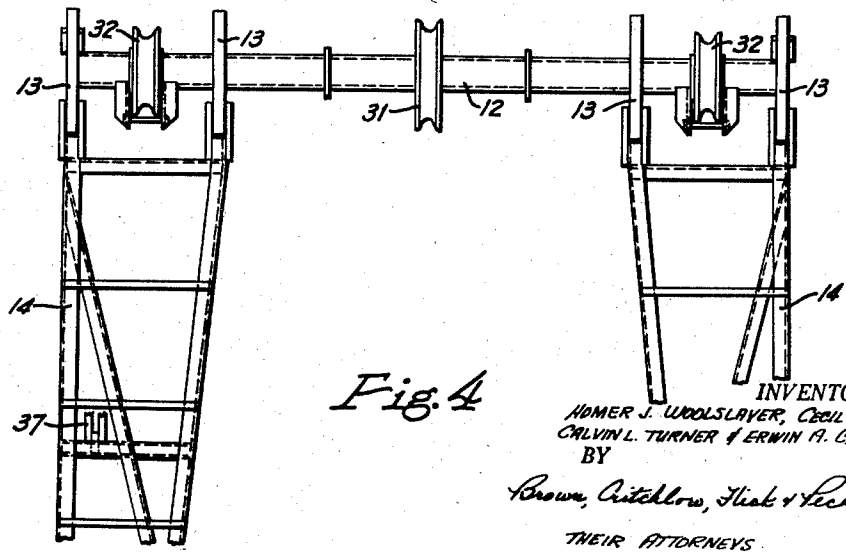


Fig. 4

INVENTORS
HOMER J. WOOLSLAYER, CECIL JENKINS
CALVIN L. TURNER & ERWIN A. CAMPBELL
BY
Brown, Critchlow, Flick & Peckham
THEIR ATTORNEYS

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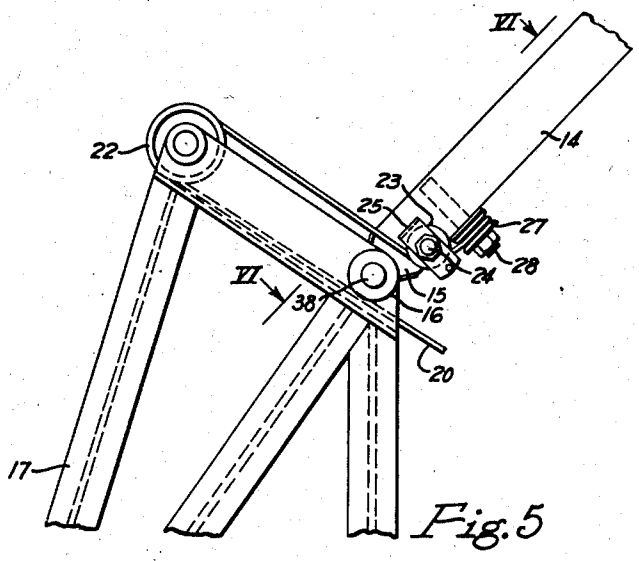


Fig. 5

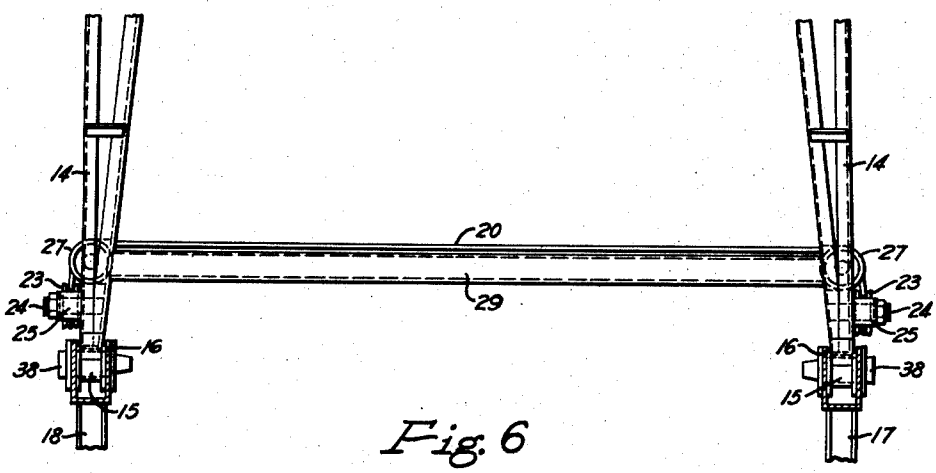


Fig. 6

INVENTORS
HOMER J. WOOLSLAYER, CECIL JENKINS
CALVIN L. TURNER & ERWIN A. CAMPBELL
BY
Brown, Critchlow, Flick & Peckham
THEIR ATTORNEYS

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FOLDING GIN POLE

Homer J. Woolslayer, Cecil Jenkins, and Calvin L. Turner, Tulsa, Okla., and Erwin A. Campbell, Wexford, Pa., assignors to Lee C. Moore Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Application March 12, 1954, Serial No. 415,892

4 Claims. (Cl. 189—15)

This invention relates to folding gin poles for oil well masts, and to the erection of such gin poles.

It is among the objects of this invention to provide a folding gin pole that can be raised from a reclining position by a line connected with the cathead of the drawworks, which moves backward to upright position in a path that carries its rear feet above the level of the cathead, which has its rear feet guided into the shoes that receive them, and which is snubbed into operative position by means of a mast-raising sling.

In accordance with this invention, a folded gin pole has reclining front and rear sides with the rear side overlying the front side. The front ends of these sides are hinged together, and the opposite end of the front side is pivotally supported on the base for an oil well mast. This permits the opposite sides of the gin pole to be swung upward. Means on the base behind the supporting means will receive the lower end of the rear side of the gin pole after it has been swung upward. To swing it upward a sheave is mounted behind the receiving means, and a line is connected with the rear side of the gin pole and extends rearwardly around the sheave and then forward. The front part of the line is adapted to be pulled forward, such as by the cathead of the drawworks, to swing the lower end of the rear side of the gin pole back to the receiving means. Tension means may be provided which connect the front and rear sides of the gin pole to limit the distance that they can be spread apart. A mast-raising sling connecting the top of the gin pole with the traveling block can be used to retard the movement of the rear side of the gin pole into its reeciving means.

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

Fig. 1 is a diagrammatic side view of our oil well drilling apparatus, showing the gin pole in a partly raised position;

Fig. 2 is an enlarged side view of the upper part of the erected gin pole;

Figs. 3 and 4 are fragmentary front and rear views of the gin pole, taken on the lines III—III and IV—IV, respectively, of Fig. 2;

Fig. 5 is a fragmentary side view of the upper part of the support for the back feet of the gin pole;

Fig. 6 is a fragmentary rear view taken on the line VI—VI of Fig. 5; and

Fig. 7 is a schematic isometric view, showing the gin pole being raised.

Referring to Fig. 1 of the drawings, each of the feet of a reclining mast **1** is pivotally mounted on a hinge pin **2** in the front part of a shoe **3** mounted on a base **4** of any suitable construction. The mast has its lower or front side open, and the traveling block **5** is shown near the base and is connected by the drilling line **6** with the head or crown block **7** of the mast, from which the line extends back above the mast to the drawworks **8** located on the base behind the shoes.

Pivotally mounted on a pin **10** in the upper back part

of each of the shoes **3** is the lower end of one of the front legs **11** of a folding gin pole. The upper ends of these legs are rigidly connected by a horizontal tubular member **12**, as shown in Figs. 3 and 4. Projecting rearwardly from the tubular member at an acute angle to the front legs, are short plates **13** (Figs. 2 and 4) that are pivotally mounted in the forked upper ends of the rear legs **14** of the gin pole. The lower ends of the rear legs are provided with perforated pin-receiving feet **15**, so that they can be removably mounted in rear shoes **16** (Figs. 5 and 6) supported several feet above the base by superstructures **17** and **18** on the base behind the drawworks, as shown in Figs. 1 and 2.

In Fig. 1 the gin pole is shown in a broken line folded position reclining on the lower part of the mast, with the rear legs of the pole overlying the front legs. In this position, the lower ends or feet of the gin pole are at its rear end. The folded gin pole can be swung upward and its front and rear sides spread apart, so that the feet of the rear legs will be received in rear shoes **16**, by means of a raising line **20**. One end of this line preferably is looped around the cathead **21** of the drawworks, from which it extends back behind the adjacent rear shoe and then up and around a vertical sheave **22** journaled in the superstructure **17** behind the shoe. From there the line extends forward for connection with the lower or rear part of the back side of the gin pole. For best results, such as reasonable stresses and balanced pull on the gin pole, the line extends around sheaves carried by the rear legs of the gin pole and has its opposite end anchored to the top of the other superstructure **18** behind the shoe **16** which it supports. Since the direction in which the rear legs of the gin pole extend changes continuously while the pole is being raised, the gin pole is provided with two pairs of sheaves for the erection line. The vertical sheaves **23** in one pair are substantially parallel to each other, as shown in Figs. 5 and 6, and are mounted on studs **25** projecting from the outer faces of the rear legs near their feet, the outer ends of the studs being supported by brackets **25** welded to the legs. Just above each of these sheaves is another sheave **27** which is journaled on a stud **28** extending crossways of the stud below it, whereby these two sheaves lie substantially in the same plane. The raising line **20** from the superstructure sheave **22** extends forward under the gin pole sheave **23** in front of it, then up around the sheave **27** above, across the gin pole to the opposite sheave **27**, and then down around the other side sheave **23** and back to an anchor point on the superstructure **18** behind it.

With this arrangement, when the raising line is snubbed on the cathead it pulls the back feet **15** of the gin pole backward. The tension on the line between the two sheaves **27** is prevented from pulling the back feet toward each other by a horizontal spreader bar **29** which has its ends welded to the two back legs near the sheaves. As the back feet of the gin pole are pulled back, its front feet pivot in shoes **3** and the pole rises and simultaneously starts to unfold. It is shown in an intermediate position in full lines in Figs. 1 and 7.

The drilling line **6** extends over a sheave **31** journaled on the central part of the tubular member **12** at the head of the gin pole. The ends of the tubular member also support a pair of sheaves **32**, around which a sling **33** extends. The ends of the sling line are fastened to the top of the reclining mast at anchor points **34**, while the opposite end of the sling extends beneath vertical sheaves **35**, journaled in opposite sides of the mast, and is looped over the hook of the traveling block. Due to the location of the traveling block, as established by prior lowering of the gin pole, the sling will become taut at about the time the pole starts to fall backward over center, which

is the position shown in Fig. 1. Consequently, it will be necessary for the gin pole to drag the traveling block toward the base **4** as the pole continues to swing back to the upright broken line position of Fig. 1. The combination of the catline forces and the sling drag will cause the back feet **15** of the gin pole to move in an approximately horizontal course over the cathead until the gin pole is fully spread.

To limit spreading of the gin pole to the distance necessary for its back feet to move down into rear shoes **16**, a pair of pivotally connected links **37** are located between the upper parts of the front and rear legs, to which the outer ends of the links are pivotally connected. The length of the links is such that the position of the rear feet of the gin pole will be controlled so that they will move into the rear shoes for connection thereto. Consequently, the gin pole is spread to the desired extent automatically as it is raised.

After the back feet of the gin pole have been fastened in the rear shoes by pins **38**, as shown in Figs. 5 and 6, the drilling line **6** is reeled in by the drawworks to cause the traveling block to pull forward on sling **33** and thereby swing the mast up and back against the gin pole in a well known manner to the broken line position shown in Fig. 1.

When it is desired to lower the gin pole after the mast has been lowered, the back feet of the pole are disconnected from the rear shoes **16** and the drilling line **6** is reeled in by the drawworks to cause the traveling block **5** to pull forward on sling **33**. This will swing the gin pole forward but its motion can be snubbed by the raising line **20**. After the center of gravity of the gin pole passes over the front shoes **3**, the pole will lower itself to its folded position by gravity, but its descent will be restrained and controlled by line **20**.

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. The combination with a base for an oil well mast, of a folded gin pole having a pair of reclining front legs and a pair of reclining rear legs with the rear legs overlying the front legs, means hinging the top ends of the front legs to the top ends of the rear legs, means on the base pivotally supporting the lower ends of the front legs to permit the legs to be swung upward, shoes mounted on the base behing said supporting means for receiving the lower ends of said rear legs after they have been swung upward, flexible tension means connecting each rear leg to the leg in front of it to limit the distance that they can be spread apart, a sheave mounted behind one of the shoes, sheaves carried by the lower ends of the rear legs of the gin pole, and a line having one end anchored behind the other shoe and extending forward around said gin pole sheaves and then back around said first-mentioned sheave and then forward again, the opposite end of the line being adapted to be pulled forward to pull the gin pole sheaves toward the shoes and thereby lift the pole and simultaneously swing its rear legs away from its front legs and to said shoes.

2. A structure as defined in claim 1, in which said gin pole sheaves include a substantially vertical sheave on each rear leg, said vertical sheaves being substantially parallel, and another pair of sheaves lying in a common plane parallel to the axes of said vertical sheaves.

3. A portable oil well derrick comprising a base, drawworks on the base having a drum and a cathead, a reclining mast having a foot hinged to the base in front of the drawworks and extending forward therefrom, a traveling block near the foot of the mast, a drilling line connecting the block with the head of the mast and the drawworks drum, a folded gin pole above the base extending forward over the mast, the gin pole having a reclining front side and a pair of reclining rear legs overlying the front side, means hinging the top ends of the rear legs to the top end of the front side, means pivotally connecting the lower end of the front side with the base in front of the drawworks to permit the gin pole to be swung upward, shoes mounted behind the drawworks for receiving the lower ends of said rear legs after they have been swung upward, means for limiting the distance that the rear legs of the gin pole can be swung away from its front side, a sheave mounted behind one of the shoes, sheaves carried by the lower ends of the rear legs of the gin pole, a line having one end anchored behind the other shoe and extending forward around said gin pole sheaves and then back around said first-mentioned sheave and then forward to said cathead, said line being adapted to be pulled by the cathead to pull the gin pole sheaves toward said shoes and thereby lift the gin pole and swing the lower ends of its rear legs back past the drawworks to the shoes, and a sling connected with the traveling block and the mast and the top of the gin pole for raising the mast as the traveling block is pulled toward the head of the mast after the gin pole has been erected, said sling being pulled taut by the gin pole as it swings backward, whereby downward movement of the rear legs of the gin pole toward said shoes is retarded.

4. A portable oil well derrick in accordance with claim 3, in which said shoes are disposed at a level near the top of the drawworks.

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