Nov. 17, 1925. 1,562,148

F. W. CARLSON

PUMP ROD HANDLING DEVICE

Original Filed Dec. 2, 1924

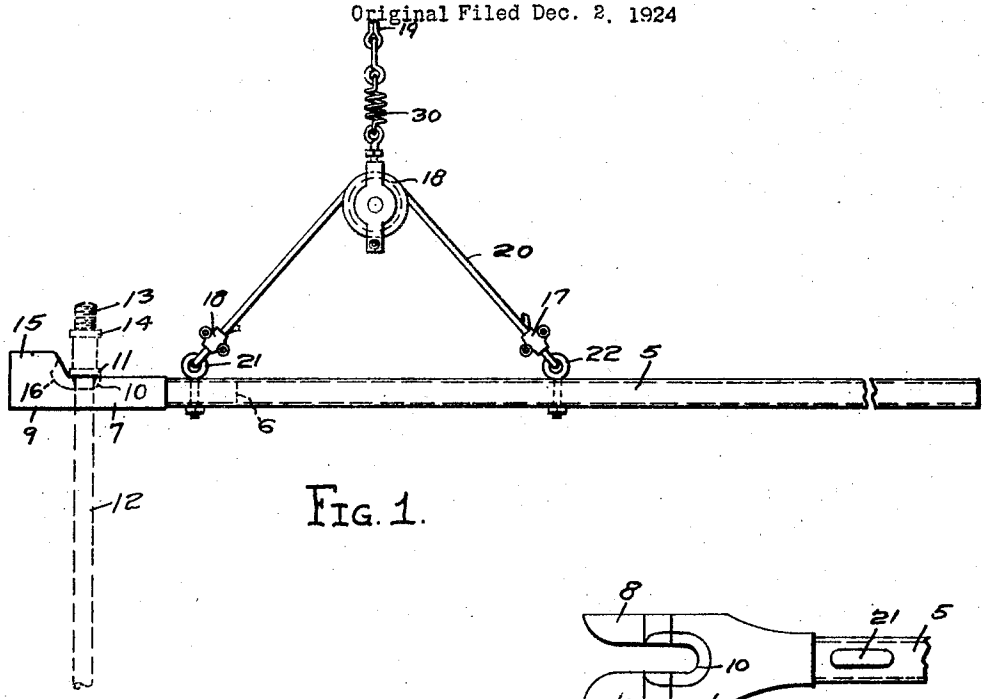


FIG. 1.

FIG. 2.

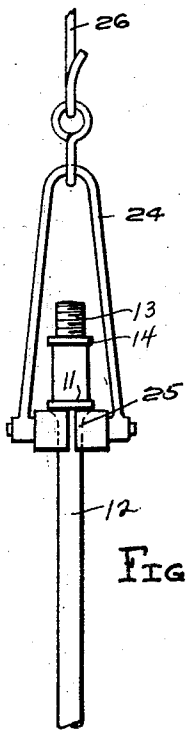


FIG. 3.



FIG. 4.

Inventor

F. W. CARLSON,

By Shepherd & Campbell

Attorneys

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UNITED STATES PATENT OFFICE.

FRANK WILLIAM CARLSON, OF OILFIELDS, CALIFORNIA, ASSIGNOR OF ONE-FOURTH TO JOHN NELSON SCARLETT AND ONE-FOURTH TO LELAND ERASTIS AXTELL, BOTH OF OILFIELDS, CALIFORNIA.

PUMP-ROD-HANDLING DEVICE.

Application filed December 2, 1924, Serial No. 753,532. Renewed October 13, 1925.

To all whom it may concern:

Be it known that I, FRANK WILLIAM CARLSON, a citizen of the United States, residing at Oilfields, in the county of Fresno and State of California, have invented certain new and useful Improvements in a Pump-Rod-Handling Device, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a pump rod handling device. It was formerly the practice in removing pump rods from deep wells to hoist the rods out in "stands", each stand consisting of two or three lengths of pump rod and to lay the stands out upon the ground. A more modern method and the one now commonly employed is to hang these rod stands from rod hangers, which are in turn supported by the usual derricks of the wells.

It is a primary object of the present invention to provide an improved device by means of which one man can hold the stand of rods during the disengagement of the elevator therefrom and during the time that the stand is being unscrewed from the rods therebelow, and transfer said rods to the hangers by which they are supported from the derrick.

Further objects and advantages of the invention will be set forth in the detailed description which follows:

In the accompanying drawings:

Figure 1 is a side elevation of the rod handling device constructed in accordance with the invention.

Figure 2 is a plan view of the forward end thereof.

Figure 3 is an elevation of one of the rods showing one of the rod elevators attached thereto, and

Figure 4 is a detailed view of a modified form of rod hereinafter described.

Like numerals designates corresponding parts in all of the figures of the drawing:

The particular embodiment of the invention which I have chosen for purposes of illustration comprises an elongated tubular handle 5, the outer end of which receives the shank 6, of a head 7. By referring to Figure 2 it will be seen that this head is in the form of a fork including the jaws 8 and 9. This fork is recessed as indicated at 10 to form a seat for the usual flange 11, of a pump rod section 12. These pump rod sections are provided with threaded portions 13, which screw into the lower ends of the superimposed sections. Flanges or collars 14 are formed at the base of the threaded portions 13 and serve a purpose which will be presently described. Upwardly projecting shoulders 15 are formed at the outer ends of the jaws 8 and 9 and the seat 10 is continued into and along the inner faces of these shoulders in an arcuate path, as indicated at 16. This construction insures that the pump rod cannot, by any means, slip out of engagement with the suspension device but that upon the contrary the derrick man could release his hold entirely upon the lever 5 without having the stand of rods slip out of engagement with the head 7. In that case, the shoulder 11 would merely ride around to the portion 16 of the seat 10, the tipping action of the suspension device being stopped by engagement of the cable clamp 17 with pulley 18, before the head 7 and lever 5 had reached such an angle as to permit disengagement of the rod therefrom, the pulley 18 is suspended by means of a soft wire cable 19 from the crown of the derrick, not shown. A soft cable 20 passes over the pulley 18 and is engaged with the eye bolts 21 and 22 which in turn pass through the handle 5. The eye bolt 21, in addition, passes through the shank 6 of head 7 and secures the head in place. The cable clamps 17 and 18 serve to secure the cable 20 to the eye bolts 21 and 22. Thus the lever and head, are, in effect, pivoted upon the pulley 18 in such manner that considerable freedom of movement is given to the lever.

It will be noted that this suspension of the lever and head from pulley 18 is at a point much nearer the head than the handle end of the tubular member 5. Thus the leverage that may be exerted by the derrick man on its stand of rods is considerable and enables him to easily handle a stand of rods, two

rods weighing 60 pounds and three rods weighing 90 pounds.

The operation of the device is as follows: A pump rod elevator 24 of a usual and known construction is hooked into engagement, at 25, beneath the shoulder or collar 11, of the uppermost one of a stand of pump rods, said elevator being then drawn upwardly by the operation of the pulling line 26 in a usual and known way until the lowermost pump rod of that particular stand is entirely clear of the well tubing or stand pipe. At this time the uppermost end of the pump rods extends above a tubing board of the derrick, (not shown) upon which the derrick man stands and into proximity to the suspension device of the present invention. The stand of rods is then brought to a stop and another elevator corresponding to elevator 24 is engaged beneath the shoulder corresponding to the shoulder 11 of the uppermost pump rod of the succeeding stand of pump rods, the upper end of which is at this time just above the upper end of the well tubing. The line 26 is then slackened, the rods at this time being supported by the lower tubing elevator. The slackening of the line 26 permits the elevator 24 to move downwardly along rod 12 and the derrick man grasping the upper end of the rod 12 with his right hand and the handle 5 with his left hand thrusts the device of the present invention forward to cause its hooked end to engage beneath the shoulder 11 of rod 12; he then bears down on the handle 5 taking the weight of the stand of rods, unhooks the elevator 24 and permits said elevator to return to the ground.

During the time that the elevator is descending; the men below unscrew the rod stand from the rods still in the well. The stand of rods is free to turn on the curved or rounded seat 10. When the stand has been unscrewed the derrick man further depresses the lever 5 and takes the whole weight of the stand on the handling device. By properly manipulating the handle 5, i. e. tilting it upon the pivot provided by pulley 18 and bodily swinging it upon cable 19 he is enabled to move the rod stand to the usual rod hangers suspended close by from the derrick and to suspend the stand from one of said rod hangers, it being understood that said hangers which are of conventional form are adapted to engage beneath the shoulder 11 or 14, and some of them are adapted to engage the rods 12. After the stand has been hung on a hanger, the handling device is disengaged therefrom and swung back to its former position in readiness for the reception of the next stand of rods which is, by this time, coming up.

I contemplate including a spring 30 in the connection between the cable 19 and pulley 18. This will render the connection elastic and give a great range of action in manipulating the device to engage the stands of rods.

In Figure 4 I have illustrated a modified form of rod. This rod is like the conventional rod except that I have applied thereto a bushing or collar 31 of a shape to be engaged by the forked ends of the lever of the suspension device. The advantage of using a collar of this sort is as follows: Where the elevator 24 must be lowered a short distance before the fork of the suspension device is applied, (this being necessary because the forked lever engages the shoulder formerly engaged by the elevator) there is a short time, during which the stand of rods is supported upon the lower elevator at the top of the well tubing. In other words the rods are standing upon this lower elevator and their upper ends tend to sag over and the whole stand tends to bend through the distance between the top of the stand pipe and the top of the rods. By providing the collar illustrated in Figure 4 the handling device can be applied to this collar and the derrick man take the weight of the stand before the tension is taken off of the upper elevator. It makes no difference from a patentable standpoint how this bushing is applied to the rod. It may be pinned on, welded on or may be made an integral part of the rod, in the course of manufacture of the same.

It is to be understood that the invention is not limited to the precise construction set forth but that it includes within its purview whatever changes fairly come within either the terms or the spirit of the appended claims.

Having described my invention, what I claim is:

1. A device of the character described comprising a manually operable lever having a part adapted to engage a shoulder of a stand of rods and a bodily movable pivot point for said lever, said pivot point being located closer to the rod engaging ends of the lever than the other end thereof and a means for suspending said pivot to adapt it to swing freely in all directions.

2. A device of the character described comprising an elongated lever, having a forked end adapted to engage a stand of rods, a suspension cable, a pulley supported by said suspension cable, a cable passing over said pulley and having the opposite ends engaged with said lever in such manner as to suspend the lever in a substantially horizontal plane from said pulley and at two points in its length.

3. A device of the character described comprising an elongated lever, having a forked head adapted to engage a stand of pump rods, a pulley, means for suspending said pulley and a short section of cable having

its ends attached to the lever and having its bight portion passed over said pulley.

4. In a device of the character described, the combination with an elongated lever, of a swinging pivot for said lever, said lever having a forked head and said forked head having an arcuate seat formed therein, upstanding shoulders at the outer ends of the forked head into and along which said arcuate seat extends.

In testimony whereof I hereunto affix my signature.

FRANK WILLIAM CARLSON.