

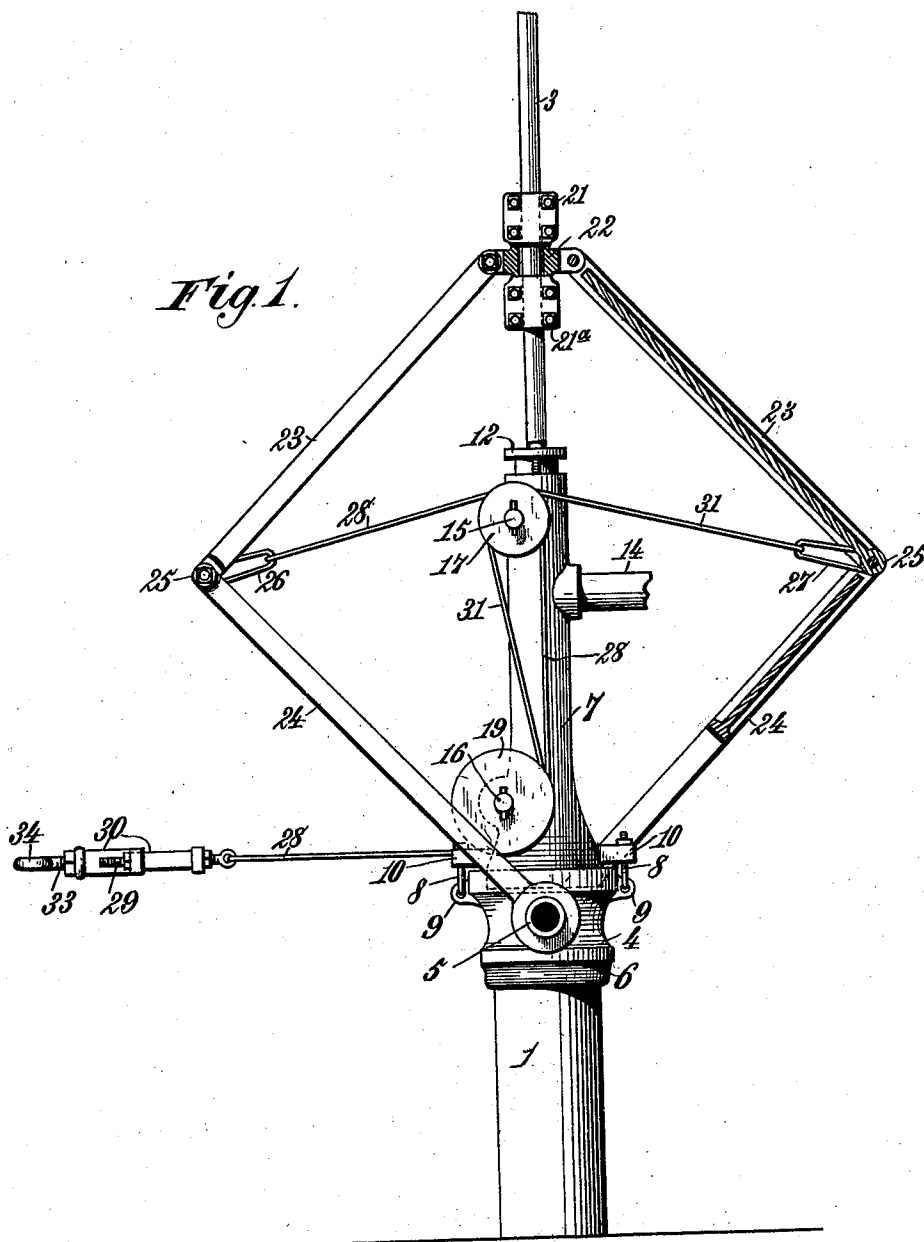
(No Model.)

2 Sheets—Sheet 1.

T. G. LANEY.
PUMPING JACK.

No. 569,926.

Patented Oct. 20, 1896.



Witnesses:
Robert G. Smith
Albert H. Norris

Inventor:
Thomas G. Laney
By *James L. Norris* Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

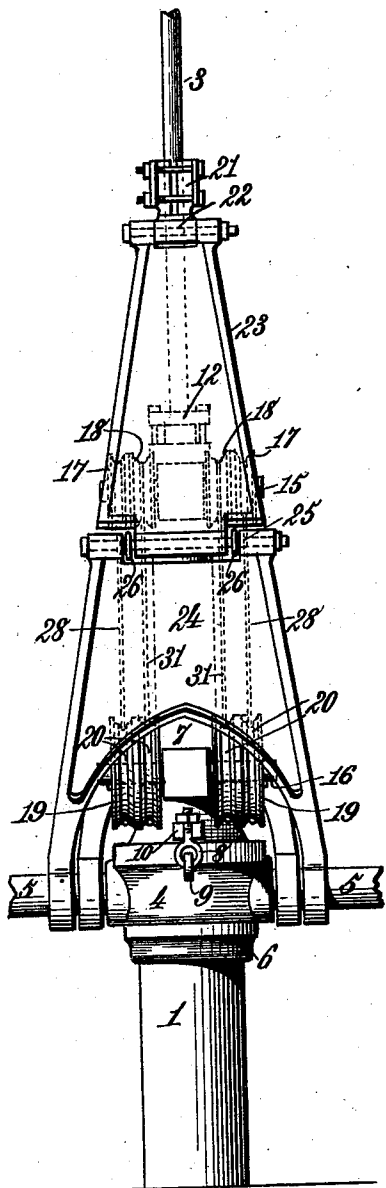


Fig. 3.

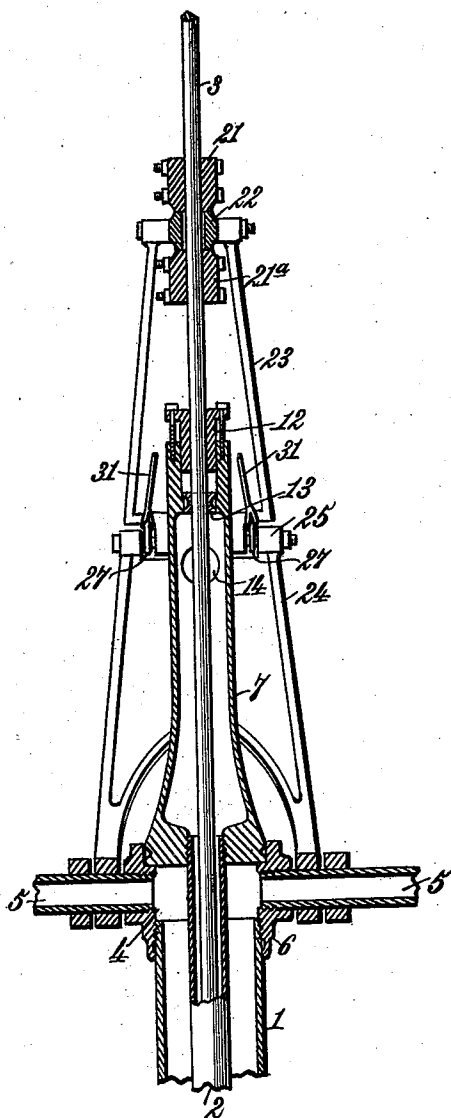
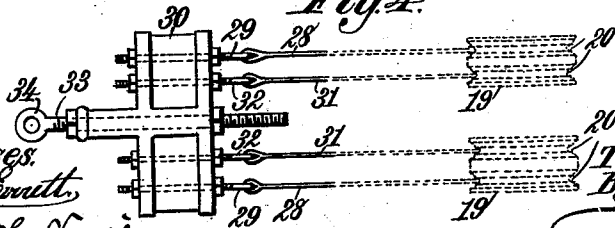


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS G. LANEY, OF LIMA, OHIO.

PUMPING-JACK.

SPECIFICATION forming part of Letters Patent No. 569,926, dated October 20, 1896.

Application filed May 28, 1896. Serial No. 593,454. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. LANEY, a subject of the Queen of Great Britain, residing at Lima, in the county of Allen and State of Ohio, have invented new and useful Improvements in Pumping-Jacks for Oil-Well,

of which the following is a specification. This invention relates particularly to oil-well pumps having a polish-rod which is reciprocated perpendicularly and is susceptible of being axially rotated to remove the paraffin.

The chief objects of my present invention are to provide a new and improved pumping-jack for working the polish-rod, and to provide novel means whereby the polish-rod can be rotated axially whenever required to loosen the paraffin.

To accomplish these objects, my invention involves the features of construction, the combination or arrangement of parts, and the principles of operation hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a sectional side elevation showing my invention in operative connection with the polish-rod of an oil-well. Fig. 2 is an elevation looking in a direction at right angles to the view, Fig. 1. Fig. 3 is a detail vertical central sectional view, and Fig. 4 is a detail plan view, showing the equalizer and cables which operate the pumping-jack.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates an ordinary well-casing, and 2 the well-tubing, in which the polish-rod 3 operates as usual. The upper end of the casing is externally screw-threaded to engage the internal screw-thread of a casing head or socket 4, having two pipes or tubes 5 screwed into its opposite sides for the escape of gas from the casing. The lower end of the head or socket 4 is constructed with an unthreaded sleeve-like extension 6, which is designed to brace the head or socket below its screw-threaded attachment to the casing and prevent stripping of the screw-thread when lateral pressure or strain is thrown on the head or socket during the pumping operation.

The upper end of the head or socket 4 is

provided with a recess in which is seated the lower end of a hollow column or tubular frame 7. The hollow column or tubular frame is retained in proper operative connection with the head or socket of the casing through the medium of any suitable connecting devices, but I prefer to employ swing-bolts 8, which connect with ears or lugs 9 on the head or socket and detachably engage flanges 10 on the lower end of the hollow column or tubular frame.

The upper end portion of the well-tubing 2 screws into the lower end of the hollow column or tubular frame, and the upper end of the latter is provided with a gland or stuffing-box 12, through which the polish-rod 3 extends. The hollow column is also provided internally with a loose ring 13, resting upon a shoulder provided on the interior of the hollow column in juxtaposition to the gland or stuffing-box 12. The polish-rod extends through the ring 13, and the latter is designed to be removed when the pump-rods are to be detached.

The hollow column or tubular frame is provided with an oil-discharge outlet or pipe 14, and with upper and lower bearings in which are journaled cross-shafts 15 and 16. The shaft 15 is provided at each side of the hollow column with two grooved sheaves or pulleys 17 and 18, and the shaft 16 is provided at each side of the hollow column with a sheave or pulley 19, having two grooves 20, for a purpose which will hereinafter appear.

The polish-rod is provided at a suitable distance above the hollow column or tubular frame with two clamps 21 and 21^a, each made of two parts designed to be rigidly clamped upon the polish-rod above and below a cross-head 22, in which the polish-rod can be axially turned. The clamps 21 and 21^a constitute abutments or shoulders for the cross-head 22, so that while the latter will serve to raise the polish-rod the polish-rod can turn in the cross-head.

The improved pumping-jack comprises two pairs of toggle-levers, each pair composed of two arms or levers 23 and 24. The arms 23 and 24 of each pair of toggle-levers are pivoted together, as at 25, and the upper ends of the arms 23 are pivoted, respectively, to the ends of the cross-head 22, while the lower

ends of the arms or levers 24 are journaled upon the gas-outlet pipes or tubes 5, which extend laterally from opposite sides of the casing head or socket 4. I do not wish to be understood as confining myself to supporting the toggle arms or levers on the gas-escape pipes or tubes, as obviously they can be otherwise supported. The pivotally-connected ends of the arms 23 and 24 are provided with loops or other suitable attachments 26 and 27. To the loops or attachments 26 are secured two cables 28, which extend over the sheaves or pulleys 17, thence extend around the sheaves or pulleys 19, and have their ends connected with the adjustable rods 29 of an equalizer composed of a head or block 30. To the loops or other attachments 27 are secured two cables 31, which extend over the sheaves or pulleys 18, and thence extend around the sheaves or pulleys 19 to the adjustable rods 32 of the equalizer. The cables 31 extend around the sheaves or pulleys 18 in a direction the reverse of the direction that the cables 28 extend around the sheaves or pulleys 17, but all the cables extend in the same direction around the sheaves or pulleys 19 in such manner that when the equalizer 30 is moved outward or in the direction away from the pumping mechanism the pivoted end portions 25 of the toggle-levers will be caused to approach the hollow column, and thereby force the polish-rod to rise in a perpendicular plane. When the equalizer moves inward or toward the pumping mechanism, the cables are released and the polish-rod will fall by gravity. The equalizer 30 is designed to be operated by a steam-engine or any other motor suitable for the purpose.

Although I have shown two cables leading from the jointed ends of each pair of toggle arms or levers I wish it understood that the number of cables can be increased or diminished to any desired extent without altering the spirit of my invention. The cables may be simply wire ropes, or they may be chains, or of any suitable construction.

The rods 29 and 32 of the equalizer 30 are lengthwise adjustable, so that it is possible to adjust and cause all the cables 28 and 31 to operate with equal power. The rods 29 and 32 may be eyebolts, suitably secured in the block or head composing the equalizer. The equalizer is preferably provided with an adjustable screw-threaded rod 33, having an eye 34, by which it may be attached to the pull-rod by which it is operated. By adjusting the central rod 33 the motion of the polish-rod can be increased or diminished from ten to seventeen inches, more or less.

The two pairs of toggle-levers at opposite sides of the hollow column are important in that they serve to raise the polish-rod in a perpendicular plane without any lateral displacement as would occur if a single pair of toggle-levers only were employed at one side of the hollow column; but, under some circumstances, a single pair of toggle-levers

might be arranged at one side only and be connected to a cable or cables passing over sheaves or pulleys in substantially the manner above described.

My invention provides a novel, simple, economical, and effective pumping-jack for operating the polish-rod of an oil-well pump, and in practical operation will be found very desirable and satisfactory.

Having thus described my invention, what I claim is—

1. The combination with the polish-rod of an oil-well pump, of toggle-levers connected with the polish-rod, a sheave or pulley, a cable connected with the pivotally-attached ends of the toggle-levers and passing over the sheave or pulley, and means for operating the cable to extend the toggle-levers and thereby raise the polish-rod, substantially as described.

2. The combination with the polish-rod of an oil-well pump, of two pairs of toggle-levers arranged at opposite sides of the polish-rod and connected therewith, sheaves or pulleys, cables connected with the pivotally-attached ends of the toggle-levers and passing over said sheaves or pulleys, and means for operating the cables to extend the toggle-levers simultaneously at opposite sides of the polish-rod for the purpose of raising the latter in a perpendicular plane, substantially as described.

3. The combination with a well-casing, and a polish-rod, of a hollow column arranged on the well-casing, sheaves or pulleys mounted on the hollow column, toggle-levers pivotally supported by the casing and connected with the polish-rod, and cables connected with the toggle-levers and passing around the sheaves or pulleys, substantially as described.

4. The combination with a well-casing having lateral pipes or tubes, and a polish-rod, of toggle-levers journaled on said pipes or tubes and connected with the polish-rod, and means for operating the toggle-levers to work the polish-rod, substantially as described.

5. The combination with a well-casing having lateral pipes or tubes and a polish-rod, of a hollow column supported by the well-casing, sheaves or pulleys mounted on the hollow columns, toggle-levers pivotally mounted on the pipes or tubes and connected with the polish-rod, and cables connected with the toggle-levers and passing around the sheaves or pulleys, substantially as described.

6. The combination with a well-casing, and a polish-rod, of a cross-head in which the polish-rod is free to axially rotate, toggle-levers mounted on the well-casing and pivotally connected with the cross-head in which the polish-rod is rotatable, and means for operating the toggle-levers to work the polish-rod, substantially as described.

7. The combination with a well-casing, of a polish-rod having upper and lower abutments or shoulders, a cross-head interposed between said abutments or shoulders and in which the

polish-rod is axially rotatable, toggle-levers pivotally connected with said cross-head, and means for operating the toggle-levers to work the polish-rod, substantially as described.

5 8. The combination with a well-casing, of a polish-rod having attached upper and lower clamps, a cross-head arranged between said clamps and in which the polish-rod can be rotated axially, toggle-levers pivotally connected with said cross-head, and means for operating the toggle-levers, substantially as described.

10 9. The combination with the polish-rod of a pump, of toggle-levers pivotally connected with the polish-rod, cables connected with the toggle-levers, sheaves or pulleys around which the cables extend, and an equalizer to which the cables are attached, substantially as described.

15 10. The combination with the polish-rod of a pump, of toggle-levers pivotally connected

with the polish-rod, cables connected with the toggle-levers, sheaves or pulleys around which the cables extend, and an equalizer having adjustable rods to which the cables are attached, 25 substantially as described.

11. The combination with the polish-rod of a pump, of toggle-levers pivotally connected with the polish-rod, cables connected with the toggle-levers, supporting-guides for the cables, and an equalizer connected with the cables and having an adjustable rod for connecting with the pull-rod by which it is operated, substantially as described. 30

In testimony whereof I have hereunto set 35 my hand in presence of two subscribing witnesses.

THOMAS G. LANEY.

Witnesses:

W. T. COPELAND,
M. J. SANFORD.