No. 772,418. PATENTED OCT. 18, 1904.

J. W. KNIGHT.

PUMPING JACK.

APPLICATION FILED APR. 20, 1904.

NO MODEL.

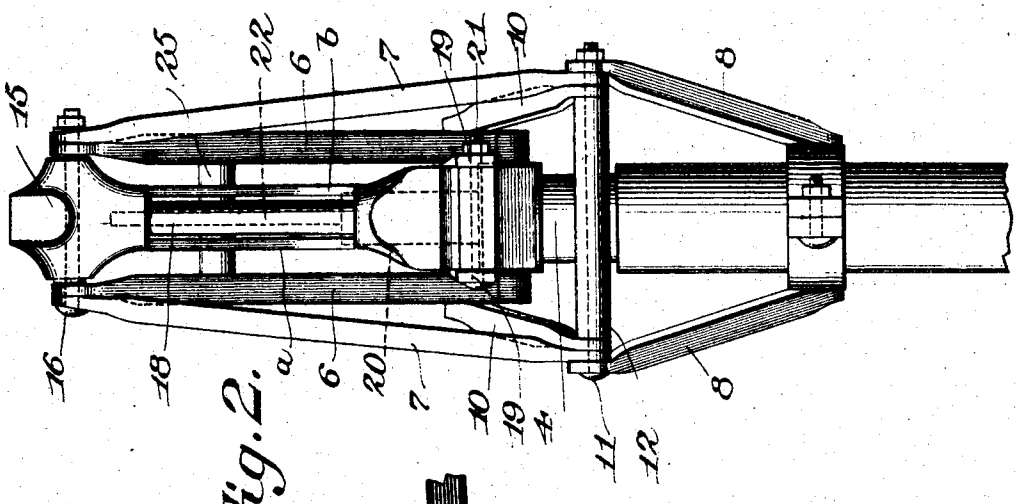

Fig. 2.

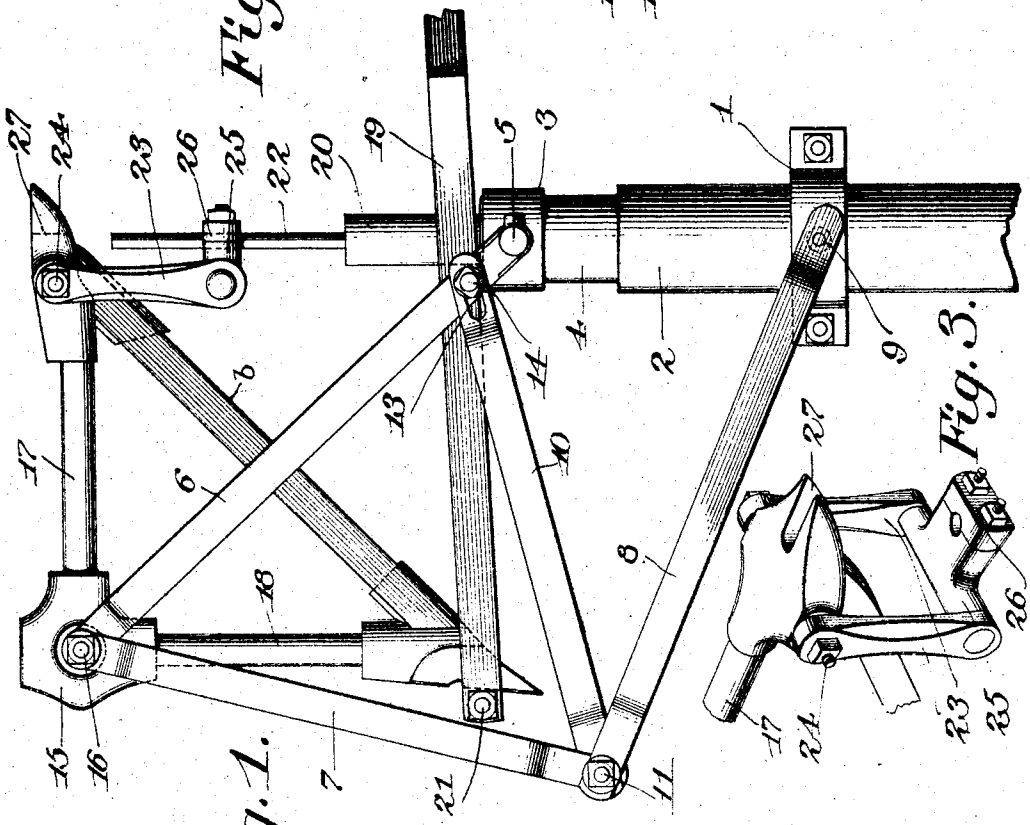

Fig. 1.

Fig. 3.

Witnesses,
E. F. Stewart
H. S. Shepard

John W. Knight, Inventor.
by C. A. Snow & Co.
Attorneys

No. 772,418. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

JOHN W. KNIGHT, OF BOWLING GREEN, OHIO.

PUMPING-JACK.

SPECIFICATION forming part of Letters Patent No. 772,418, dated October 18, 1904.

Application filed April 20, 1904. Serial No. 204,117. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. KNIGHT, a citizen of the United States, residing at Bowling Green, in the county of Wood and State of Ohio, have invented a new and useful Pumping-Jack, of which the following is a specification.

This invention relates to pumping apparatus, and is designed to provide an improved pumping-jack particularly applicable to oil-wells. It is furthermore designed to dispense with the usual platform-supports and to arrange for mounting the jack upon the drive-tube and the well-casing without employing additional supports and to permit of the jack being tilted to uncover the top of the pump without removal from the casing and drive-tube whenever it is desired to remove the pump-tube and pump-rods.

Another object is to insure a vertical movement of the polish-rod without lateral play thereof, so as to obviate wear on the stuffing-box of the pump.

With these and other objects in view the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details of the structure may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation of a pumping-jack embodying the features of the present invention and shown mounted upon the drive-tube and casing of an oil-well. Fig. 2 is a front elevation thereof. Fig. 3 is a detail perspective view of the hanger for the support of the polish-rod of the pump.

Like characters of reference designate corresponding parts in each and every figure of the drawings.

In carrying out the present invention I employ a base-ring or clamping-collar 1, which is clamped upon the upper projected end of the drive-tube 2, and a collar or casing-head 3, which is fitted to the head or upper end of the well-casing 4. The clamp 3 is provided with diametrically opposite lateral studs or projections 5, to which the lower ends of parallel upwardly-inclined frame-bars 6 are pivotally connected. From the upper ends of the bars 6 depend other frame-bars 7, and lower frame-bars 8 have their outer ends pivotally connected to the lower ends of the bars 7 and their forward lower ends pivotally connected to opposite sides of the base-clamp 1, as indicated at 9. Suitable struts 10 have their rear ends connected to the pivotally-connected ends of the frame-bars 7 and 8 by means of a cross-rod 11, there being a suitable spacing-sleeve 12 upon the rod to maintain the frame-bars at opposite sides of the jack spaced at the desired interval. The forward end of each strut 10 is provided with a longitudinal slot 13, through which passes a fastening 14 to connect the strut to the lower end of the adjacent upper frame-bar 6, whereby the frame is rendered rigid and is supported solely upon the drive-tube 2 and the well-casing 4 without additional support.

A substantially triangular rocker 15 is fulcrumed at one corner upon the cross-rod 16, which pivotally connects the upper ends of the frame-bars 6 and 7, with its upper arm 17 extending forwardly over the top of the well-casing and its upright arm 18 depending between the sides of the frame. The free ends of the arms 17 and 18 are connected by means of brace-links *a* and *b*, applied to opposite sides thereof. For actuating the rocker there is a substantially horizontal link 19, the rear bifurcated or forked portion of which works across the top of the well-casing, embraces the projected upper end portion of the pump-tube 20, and is also hinged or pivotally connected to the lower end of the rocker, as indicated at 21. This link is designed to be connected with a suitable engine (not shown) to impart a reciprocatory movement thereto and in turn rock the rocker upon its pivotal support 16.

For connecting the usual polish-rod 22 with the rocker there is a hanger consisting of a pair of links 23, pivotally hung from the forward end of the rocker, as at 24, their lower ends being pivoted to the opposite ends of a cross-head 25, the latter being provided upon

its front side with an intermediate clamp 26 for the reception of the upper end of the polish-rod, which is rigidly held therein. The upper end of the polish-rod is received within a longitudinal slot or bifurcation 27 in the forward end of the rocker, whereby said slot or bifurcation forms a guide for the upper end of the rod.

When a reciprocatory movement is given to the operating-link 19, the rocker is swung vertically and the hanger for the polish-rod is reciprocated vertically without any lateral play whatsoever, as all lateral play is effectually taken up by the pivotal mounting of the links 23 and the cross-head 25. Hence the polish-rod is given a substantially straight up-and-down movement to actuate the pump-rod and side draft of the polish-rod upon the stuffing-box of the pump is materially reduced.

From the foregoing description it is apparent that the present invention dispenses with the ordinary platform-support and provides for mounting the jack in a convenient manner upon the well-casing and the drive-tube without altering or changing these members in any manner whatsoever. Moreover, after the device has been set up for use it may be tilted to one side, so as to uncover the top of the well for convenience in removing the pump-tube and pump-rod by disconnecting the struts 10 from the upper side bars 6 and permitting the frame to swing downward until the lower frame-bars 8 strike the ground.

Having thus described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A pumping-jack comprising a base-clamp for engagement with a drive-tube, an upper clamp for engagement with a well-casing, upper and lower frame-bars connected to the upper and lower clamps respectively, an upright frame-bar connecting the upper and lower frame-bars, a rocker fulcrumed upon the frame, a pump-rod clamp carried by the rocker, and a reciprocatory connecting-link connected to the rocker.

2. A pumping-jack including a support for application to a well-casing, a frame carried solely by the support and pivoted to tilt vertically thereon, and means included in the frame to render the same normally rigid upon the support and capable of adjustment to loosen the frame and permit tilting thereof upon the support to clear the well-casing.

3. A pumping-jack including a support for application to a well-casing, a frame sustained solely by and pivotally mounted upon the support made up of loosely-connected members, said frame capable of being tilted to one side of the well-casing upon its pivotal connection with the support when not in use to uncover the top of the casing, and a strut included in the frame to normally maintain the latter rigid and capable of detachment to render the frame loose and capable of being tilted upon the support.

4. A pumping-jack including a support for application to a well-casing, upper and lower frame-bars loosely connected to the support, an upright frame-bar loosely connected to the upper and lower frame-bars, and a strut included in the frame to render the latter normally rigid and capable of being loosened upon the frame to render the latter loose and capable of being tilted upon the support to one side of the well-casing so as to uncover the top thereof.

5. A pumping-jack including a support made up of upper and lower clamp members, upper and lower frame-bars pivotally connected to the respective clamp members, an upright frame-bar pivotally connected to the upper and lower frame-bars, and a strut extending from the pivotal connection between the upright frame-bar and the lower frame-bar to the forward portion of the upper frame-bar to render the frame normally rigid, and means to detachably connect the forward end of the strut with the upper frame-bar, whereby said end may be detached and the frame rendered loose and capable of being tilted upon the support into an inoperative position.

6. In a pumping-jack, the combination of upper and lower supporting clamp members, upper and lower sets of frame-bars pivotally connected to the respective clamp members, upright frame-bars connecting the outer ends of the upper and lower frame-bars, opposite struts having their forward ends detachably connected to the forward portions of the upper frame-bars with their opposite ends connected to one of the other frame-bars, an angular rocker fulcrumed within the upper portion of the frame, a reciprocatory operating-link connected to the lower end of the rocker, a pair of links loosely hung from the front end of the rocker, a cross-head having its ends pivotally connected to the links, and a rod-clamp carried intermediately by the cross-head.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN W. KNIGHT.

Witnesses:
M. A. FAWS,
JNO. W. GRABIEL.