No. 647,144. Patented Apr. 10, 1900.

W. W. & Q. A. MERCER.

OIL WELL PUMPING JACK.

(Application filed June 2, 1899.)

(No Model.)

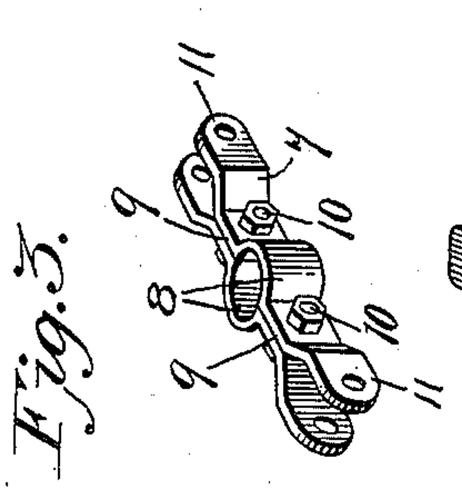

Fig. 3.

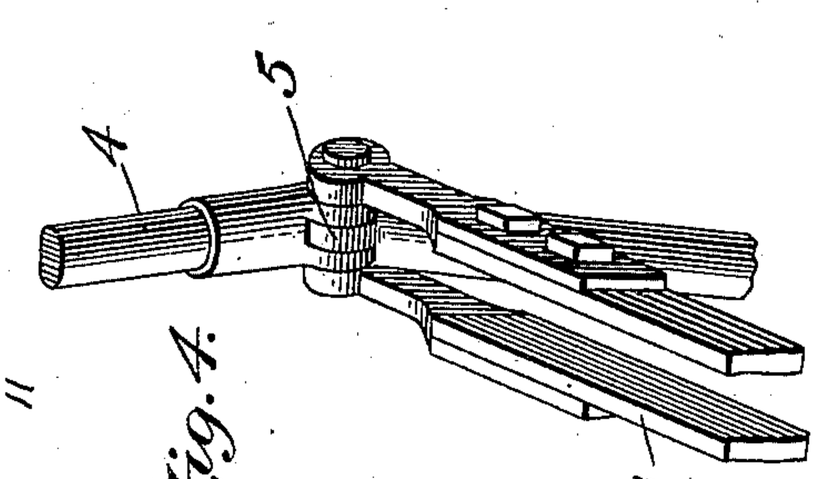

Fig. 4.

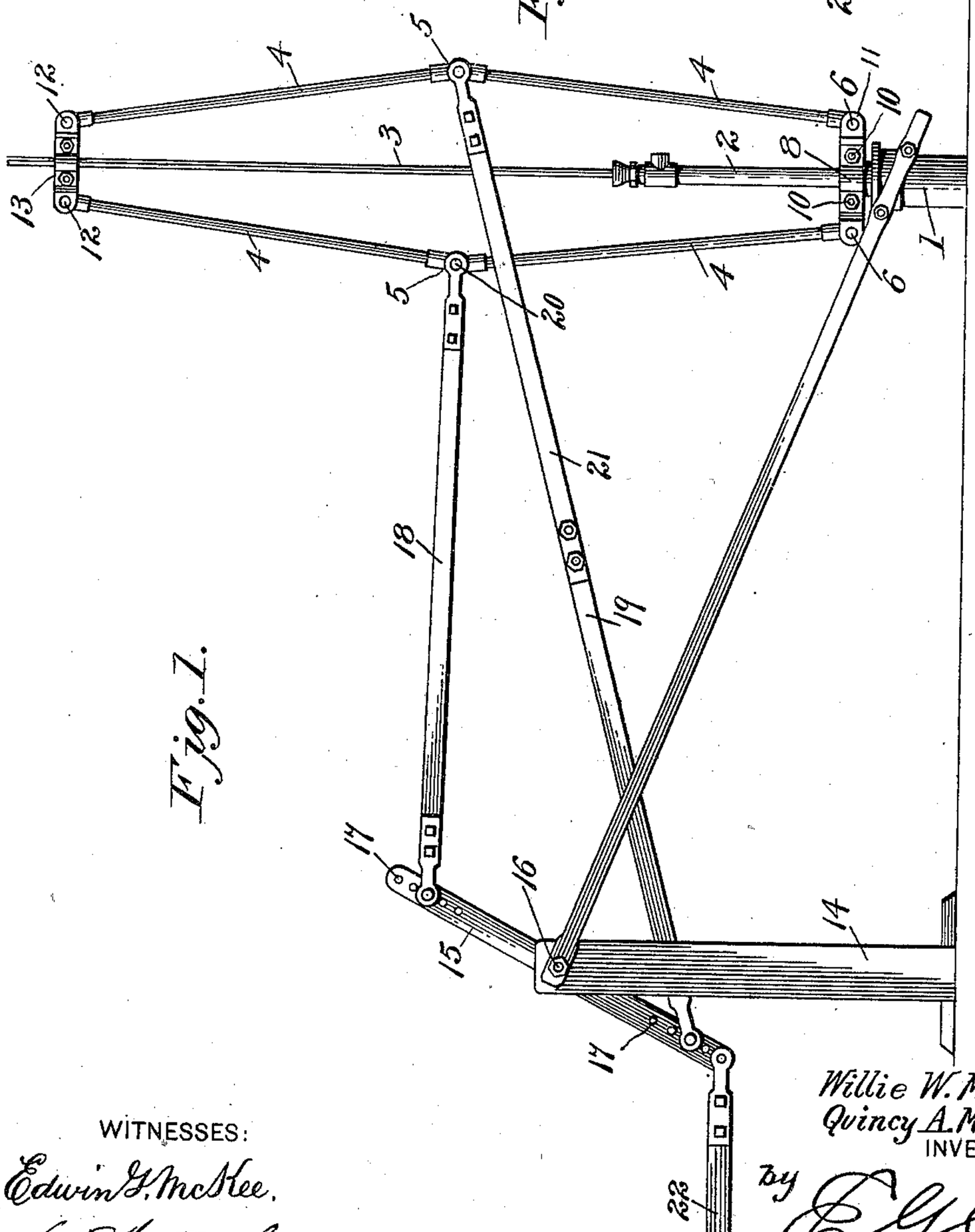

Fig. 1.

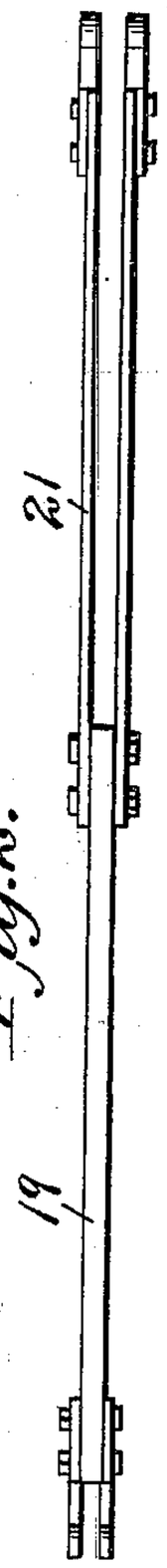

Fig. 2.

WITNESSES:

Edwin J. McKee.

L. T. Hawkins Jr.

Willie W. Mercer and
Quincy A. Mercer.
INVENTORS

by E. G. Siggers

ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIE W. MERCER AND QUINCY A. MERCER, OF BOWLING GREEN, OHIO.

OIL-WELL PUMPING-JACK.

SPECIFICATION forming part of Letters Patent No. 647,144, dated April 10, 1900.

Application filed June 2, 1899. Serial No. 719,121. (No model.)

To all whom it may concern:

Be it known that we, WILLIE W. MERCER and QUINCY A. MERCER, citizens of the United States, residing at Bowling Green, in the county of Wood and State of Ohio, have invented a new and useful Oil-Well Pumping-Jack, of which the following is a specification.

This invention relates to pumping-jacks for wells, and has for its object to simplify and improve the construction and operation of apparatus of the character above referred to.

By means of the construction hereinafter described the operative parts of the device may be readily adjusted to correspond with the angle of the tubing or sucker-rod without dismantling the parts of the pump which might cause subsequent leakage thereof. By means of the improved construction lateral strain is removed from the plunger-rod in the pumping operation, thereby greatly increasing the durability and efficiency of the apparatus. At the same time, by reason of the simplicity of the apparatus, the plunger or sucker-rod may be quickly withdrawn whenever it becomes necessary, and it is also practicable to raise or lower the main operating connection to suit requirements without impairing the efficiency of the apparatus.

Other objects and advantages of the invention will be pointed out in the course of the subjoined description.

The invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claim.

In the accompanying drawings, Figure 1 is a side elevation showing a pumping-jack for wells constructed in accordance with the present invention. Fig. 2 is a detail plan view of one of the connecting-rods. Fig. 3 is a detail perspective view of one of the clamps or connections. Fig. 4 is a detail perspective view illustrating the form of joint between the toggle-links and the manner of attaching one of the connecting-bars thereto.

Similar numerals of reference designate corresponding parts in the several views.

Referring to the drawings, 1 designates the casing of an ordinary well or pump, 2 the well-tubing leading therefrom, and 3 the plunger, sucker, or polish-rod which works up and down in the tubing, said parts being of the ordinary construction.

In carrying out the present invention we employ two sets of toggle-links 4, arranged in pairs on opposite sides of the rod 3. The rods or links 4 are connected at their adjacent ends by means of knuckle-joints 5, which allow them to move outward the necessary distance and limit their inward movement. The lower ends of the links 4 are connected by means of pivots 6 with a clamp or coupling connection 7, and said connection is mounted fast upon the well-tubing 2, immediately above the casing 1, so as to bear on the latter. The coupling 7 consists of a pair of plates bent at their central portion to form half-sleeves 8, which embrace the tubing on opposite sides, said plates being then extended outward in close parallel relation, as shown at 9, to receive bolts or suitable fastenings 10, whereby the plates are securely clamped and fastened on the tubing. The end portions 11 of the plates 7 are then spread apart to form parallel ears, between which the lower ends of the toggle-links are received and through which the pivots 6 also pass. The upper ends of the upper links are connected by pivots 12 to a coupling or clamp 13, exactly similar to the coupling 7, but preferably smaller in size to correspond with the reduced diameter of the rod 3, upon which the clamp 13 is fastened at a suitable elevation.

At a convenient distance from the parts hereinabove described we locate a standard 14, and in the upper portion of said standard we mount a lever 15, which is fulcrumed intermediate its ends, as at 16, and provided with longitudinal series of holes 17 at its opposite ends to receive pivotally and to permit of the adjustment of the outer ends of a pair of connecting-rods 18 and 19, 18 designating the upper, and 19 the lower, connecting-rod. By means of the adjustment last hereinabove described the throw of the toggle-links, and consequently the length of stroke of the plunger, may be regulated and varied to suit the conditions. The upper or shorter connecting-rod 18 is preferably single and connected pivotally to the knuckle-joint of the adjacent pair of toggle-links by means of the pin or bolt 20, which forms the pivotal connection between said toggle-links. The other con-

necting-rod 19 is made double for a portion of its length, as shown at 21, so as to straddle or embrace one of the toggle-links 4 and the plunger-rod 3, beyond which it must pass in order to be pivotally connected to the pin or bolt which forms the hinged joint between the furthermost pair of toggle-links, said connecting-rod 19 being necessarily longer than the one 18.

Motion is imparted to the lever 15 by means of an operating bar or connection 22, which is also adjustable to any one of the holes 17. It is practicable to attach the bar 22 either to the upper or lower arm of the lever 15, thus adapting the apparatus to be operated upon a hillside. The arrangement of the bar 22 at the upper end of the lever 14 will also enable persons and teams to pass beneath the same.

We are aware that it is not new to employ toggle-links in connection with the operating mechanism of pumps, but as far as we are aware the operative parts of the mechanism have been mounted either upon the gas-pipes or in such other way as to render it almost impossible, and certainly very difficult, to set or readjust the operating mechanism so as to line up properly with the plunger-rod. For example, where the mechanism is connected to the gas-pipes if said pipes are not disposed at their proper angle their position must be changed, and this is a difficult matter, as the casing cannot well be turned without removing the head of the casing, and this in turn is apt to produce a leak. It is also almost an impossibility to turn the head of the casing after it has been in place a long time and become rusted.

Another important advantage of the present invention resides in the fact that there is no direct pull or lateral strain on the tubing, as the only connection with the tubing is where the tubing enters the casing, and by reason of the particular disposition of the connecting-rods 18 and 19 one of said rods pulls as the other pushes, thereby equalizing the strain. Where the pull or strain is brought directly on the well-tubing, there is great danger of bending or breaking said tubing. In order to remove the rod, it is only necessary to detach two of the hinge pins or pivots. This may be accomplished by means of ordinary tools. In most pumping-jacks heretofore constructed special tools, such as a pair of tongs, are required. By connecting the rods 18 and 19 to the toggle-links by the same pins which connect the adjacent ends of said links greater power and ease of operation are obtained.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described oil-well pumping-jack will be apparent to those skilled in the art without further description, and it will be understood that changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

The combination with a well-casing, well-tube, and a plunger-rod, of two sets of toggle-links connected by knuckle-joints and pivotally coupled at their upper and lower ends respectively to the plunger-rod and well-tube, an operating-lever disconnected from the well-casing, well-tube and plunger-rod and fulcrumed intermediate its ends on an independent support located at a point remote from the well-tube, connecting-rods of unequal lengths pivotally attached at one end to the two arms of the lever, and at their other ends to the knuckles of the two sets of toggle-links, and an operating-bar detachably connected to said lever, the parts being so combined that the bar may be connected to the operating-lever at different elevations, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

WILLIE W. MERCER.
QUINCY A. MERCER.

Witnesses:
GEORGE A. HEIN,
JOHN MCLAUGHLIN.