(No Model.) 2 Sheets—Sheet 1.

J. TAYLOR.

MEANS FOR PUMPING OIL WELLS.

No. 565,815. Patented Aug. 11, 1896.

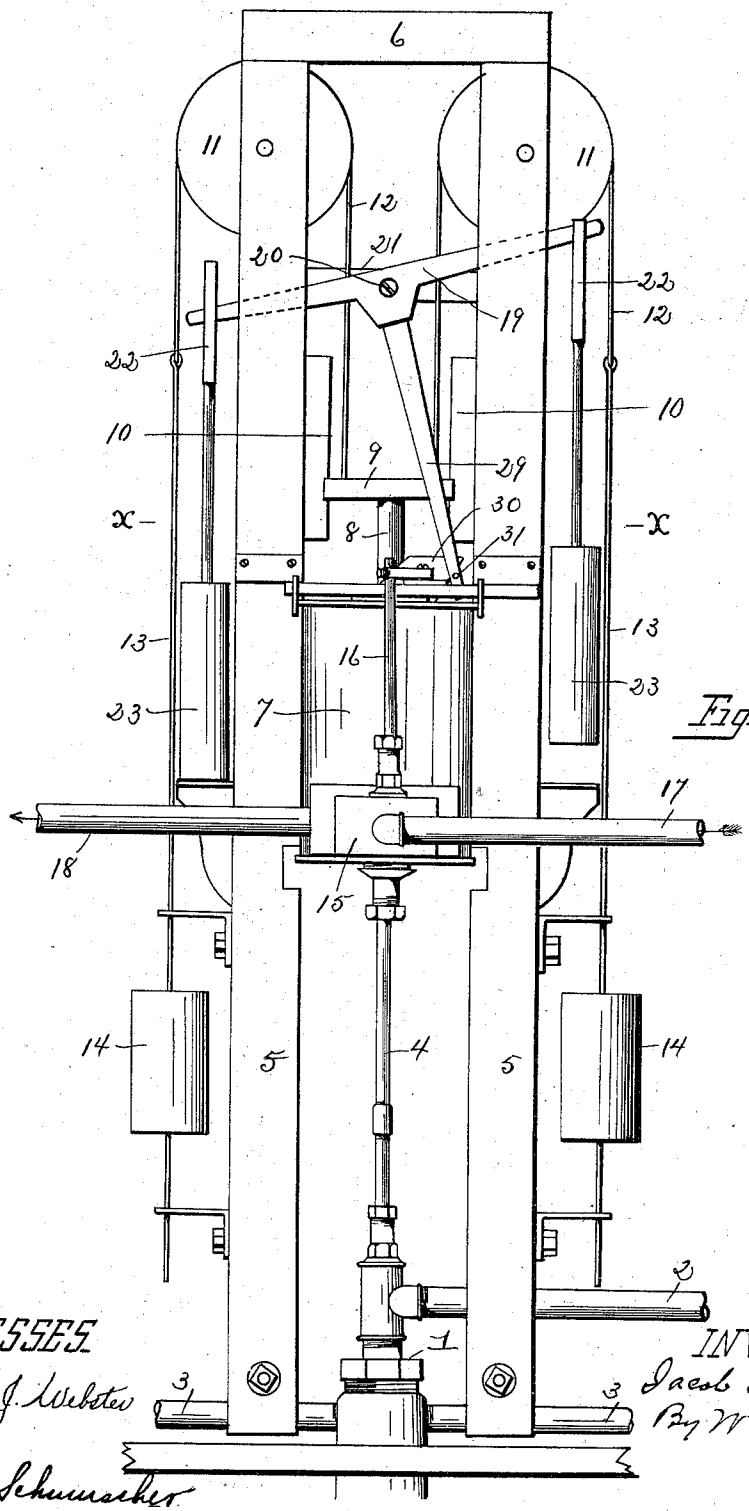

Fig. 1.

WITNESSES.
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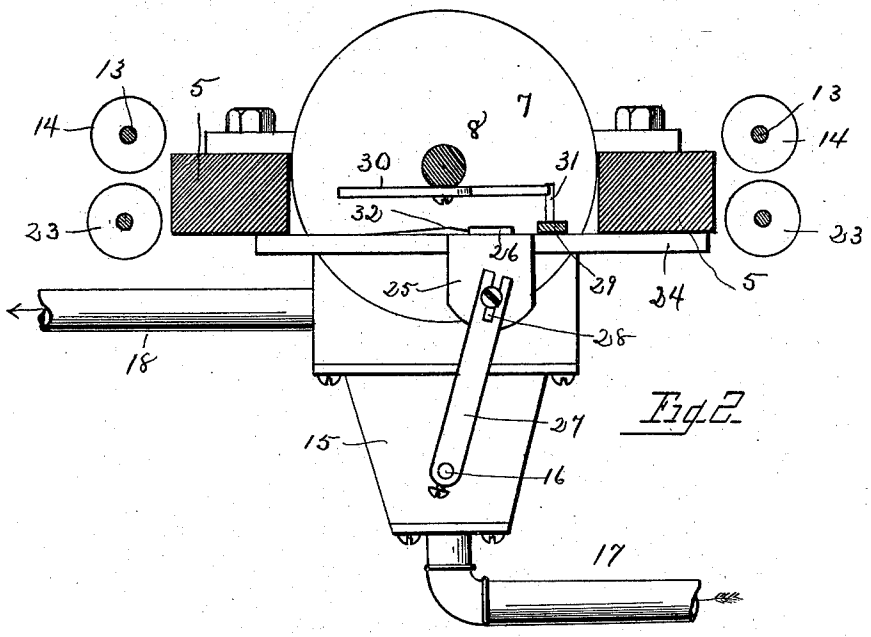

Fig 2

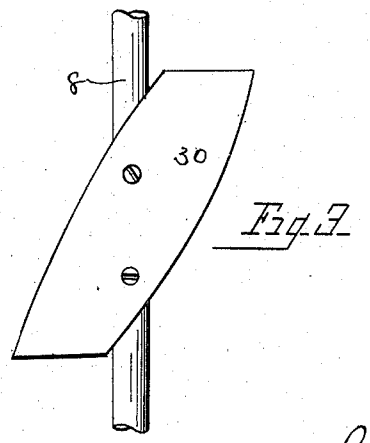

Fig 3

WITNESSES

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UNITED STATES PATENT OFFICE.

JACOB TAYLOR, OF PRAIRIE DEPOT, OHIO.

MEANS FOR PUMPING OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 565,815, dated August 11, 1896.

Application filed May 13, 1895. Serial No. 549,081. (No model.)

To all whom it may concern:

Be it known that I, JACOB TAYLOR, of Prairie Depot, county of Wood, and State of Ohio, have invented certain new and useful Improvements in Means for Pumping Oil-Wells; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to means for pumping oil-wells, and has for its object to provide means for pumping a number of wells from one power.

The invention consists in an engine worked by compressed air, whereby a vertical movement is given to the sucker-rod.

Heretofore it has been usual at each oil-well to provide an engine which works the sucker-rod through the medium of a walking-beam. The movement imparted to the rod by the walking-beam is a lateral movement as well as a vertical movement, and therefore causes considerable wear at the casing-head. Another objection is that the machinery necessary to pump each well is expensive.

This invention has for its object to overcome these difficulties by providing, first, for a vertical movement of the sucker-rod without lateral play, and, secondly, by providing an engine having compressed air for its power. Therefore as many engines can be worked from the one compressor as can be connected thereto, as the sucker-rod is so counterweighted that the power used is only exerted in raising the oil, the weight of the sucker-rod returning the same.

The invention further consists in the parts as shown, described, and claimed.

In the drawings, Figure 1 is a front elevation of a complete engine constructed in accordance with my invention. Fig. 2 is a sectional plan view on lines *x x*, Fig. 1, showing more practically the means employed for reversing the stroke of the plunger. Fig. 3 is a detail view of the cam.

1 designates the casing-head; 2, the lead-off pipe; 3, the lead-off pipes for gas, and 4 the sucker-rod.

Thus far I have described that part of the construction of the well, tubing, &c., that is now in use, and which may be of the well-known or of any preferred construction, my invention relating, solely, to the means by which the sucker-rod is moved.

5 designates upright beams supported upon the lead-off pipes 3, there being a cross-beam 6 at the upper end. Secured between the uprights 5 about medium the height of the same is a cylinder 7, to the piston of which is secured upon the lower side the sucker-rod 4 and the piston-rod 8, the piston-rod having a cross-piece 9 at its upper end, which has a vertical movement in the guides 10, by which means it is confined to a vertical movement. Journaled upon the upper ends of the upright are pulleys 11, over which run cables 12, one end of each cable being connected with the cross-piece 9, the opposite ends having a rod 13 secured thereto, upon which are weights 14, said weights being of sufficient size to counterweight the sucker-rod, whereby the power needed to be exerted upon the piston-head has only to raise the liquid being pumped.

15 designates the valve-chamber, which is provided with a rock-valve of any desired or well-known description, the stem 16 of the valve extending upon the casing, and 17 designates the supply-pipe leading to the compressor, and 18 designates the exhaust-pipe.

I will now proceed to describe the means for rocking the valve by which to change the direction of the stroke of the piston.

19 designates a beam pivoted at 20 to a cross-piece 21, the outer ends of the side beam being impressed by straps 22, the lower ends of side straps having a weight 23 suspended thereon.

24 designates a sliding rod having lateral movement in front of the valve-stem 16, said sliding rod having an integral plate 25 and a lug 26. Secured upon the valve-stem is one end of the lever 27, the opposite end extending upon the plate 25. Therefore as the sliding rod 24 moves back and forth the valve-stem 16, and consequently the rock-valve, has a rocking motion imparted thereto and alternately admits or cuts off the supply of air. Depending from the beam 19 is a lever 29, and secured upon the piston-rod 8 is a cam-plate 30, the lower end of the lever 29 having

a pin 31, which at all times bears against the cam.

The operation is as follows: Reference is had to Fig. 1, in which view the piston is shown as not having completed its downward stroke. As it continues to descend the upper end of the cam 30 will fall below the pin 31, when the weight 23 will cause lever 19 to rock and carry the lever 29, which abuts against the projection 26, causing the lever 24 to slide, through the medium of the lever 27, rocking the valve and allowing the air to pass under the cylinder-head, which commences to rise. As the lever 29 passes the center line at every engagement with the projection 26 by means of a stationary incline 32, by which means as the piston-rod and cam 30 commence on their upward stroke the pin 31 is engaged by the opposite weight 23 to that shown in the cut, whereby when the piston has come to its full upper stroke or when the cam passes above the pin the operation just described is reversed.

By supporting the weight of the apparatus upon the lead-off pipes, as described, the pull exerted by the sucker-rod is not transmitted to the casing, as the strain of the frame is upon the lead-off pipes and causes an equilibrium between these points and thereby prevents movement and a constant leakage from the casing.

What I claim is—

In means for pumping wells, a cylinder, a valve for controlling the flow of air thereto, a piston-head in the cylinder, a piston-rod secured thereto and to the sucker-rod, a cam upon the piston-rod, a lever actuated by the cam, a sliding rod connected to the valve-stem and actuated by the lever, and weights connected to the lever to automatically move the same upon the full stroke of the piston.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

JACOB TAYLOR.

Witnesses:
CARROLL J. WEBSTER,
MAUD SCHUMACHER.