T. Mayhew

Oil Pump,

No. 52,364. Patented Jan. 30, 1866.

Fig. 1.

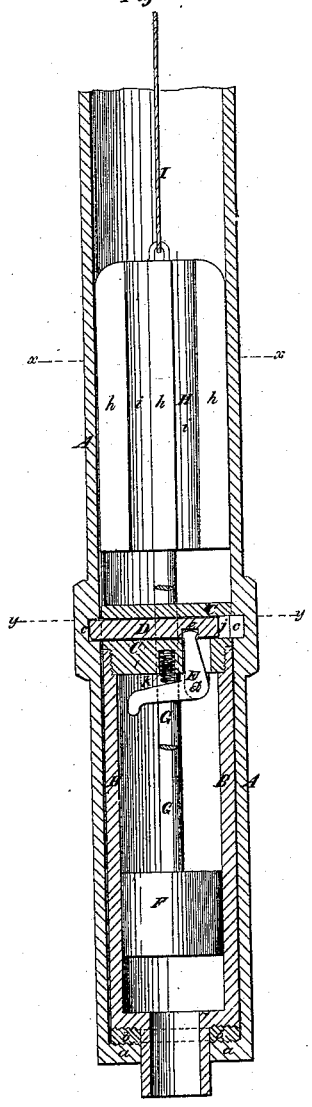


Fig. 2.

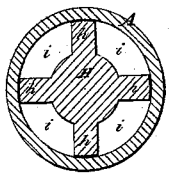
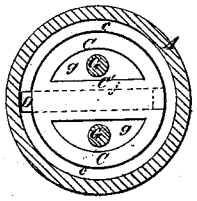


Fig. 3



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UNITED STATES PATENT OFFICE.

THEOPHILUS MAYHEW, OF NEW YORK, ASSIGNOR TO HIMSELF AND CHAS. LOCKITT, OF BROOKLYN, N. Y.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **52,364**, dated January 30, 1866.

To all whom it may concern:

Be it known that I, THEOPHILUS MAYHEW, of the city, county, and State of New York, have invented a new and useful Improvement in Pumps for Oil-Wells and other Deep-Tubed Wells; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of the lower part of a well-tube and of the pump contained therein. Fig. 2 is a horizontal section of the same in the plane indicated by the line *x x* in Fig. 1. Fig. 3 is a horizontal section of the same in the plane indicated by the line *y y* in Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

One object of my invention is to dispense with the use of the so-called "sucker-rods" used for operating the pumps of oil-wells and other deep-tubed wells, such rods being costly and the joints employed to connect their several lengths being very liable to get out of repair. Another object is to provide for the withdrawal of the pump from the well whenever necessary or desirable without disturbing the tube. To accomplish these results the pump-cylinder is fitted loosely into the lower section of the well-tube and secured therein by a spring-catch which enters a groove in the tube, and the bucket or plunger is suspended from the same rope or chain which also serves to draw up the pump when desired. The bucket or plunger has attached to it a weight, which, working in the tube above the cylinder, serves as a guide, and also to assist in producing the downstroke after the upstroke has been produced by pulling up the rope or chain. The spring-catch is so constructed and arranged that by drawing up the bucket or plunger above the highest position to which it is drawn up in pumping the said catch is withdrawn from the groove in the well-tube, and that by continuing to draw up the rope the attached bucket or plunger brings up with it the pump-cylinder.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the lowest section of the well-tube, which, for facility of construction, is made of cast-iron. It has an internal flange, *a*, around the lower end for the support of the pump-cylinder B, the bottom of which rests upon a packing-ring, *b*, of india-rubber or other suitable yielding material, by which a water-tight joint is formed between the cylinder and tube. The bottom of the pump-cylinder and upper surface of the flange *a* are grooved or corrugated circumferentially to indent themselves into the packing-ring, and so insure a water-tight joint. The cylinder, which is fitted snugly but loosely within the tube, has screwed or otherwise secured within its open upper end an open head, C, across which there is a yoke, C′, in which there is a horizontal mortise, *j*, for the reception of the sliding bolt D of the latch by which the cylinder is secured in the tube A, the point of the said bolt entering for the purpose a circumferential groove, *c*, provided around the interior of the tube. To and under the open head C of the pump-cylinder there is attached, by a fulcrum-pin, *d*, an elbow or bell-crank lever, E, Fig. 1, the extremity of one arm of which, working through a slot in the yoke C′, enters a notch, *e*, in the lower edge of the sliding bolt D, and to the other arm of which is applied a spring, *k*, which acts upon the said lever in such manner as to exert a constant tendency to project the sliding bolt into the groove *c*, and so lock the cylinder in the tube. The bolt D is so arranged that it will enter the groove *c* when the bottom of the cylinder rests firmly upon the packing-ring *b*.

F is the pump bucket or plunger, having secured to it two upright rods. G G, which pass through the openings *g g*, Fig. 3, provided in the cylinder-head C, one on each side of the yoke C′. To the upper ends of these rods is firmly secured the weight H, which assists the pump-plunger in its descent. This weight is made, as shown in Fig. 2, with upright fins *h h*, the edges of which fit easily within the tube A above the cylinder, and serve as guides to the plunger. The spaces *i i* between these fins are water-ways. The weight H is suspended directly from the rope or chain I, which passes upward through the whole length of the well-tube, and is attached to the beam or other contrivance for working the pump, and

as the rods G G connect the bucket or plunger with the weight they connect it also with the rope.

The pump may have its valves constructed and applied in the usual or any suitable manner, and I have therefore not thought it necessary to represent them.

When the pump-cylinder with its plunger or bucket and attached weight H are lowered down the well-tube by means of the rope I the sliding bolt D of the spring-catch is held back against the pressure of the spring *k* upon the lever E by contact with the interior of the well-tube until the said cylinder comes down upon the packing-ring *b* at the bottom of the tube *a*, and the sliding bolt D of the spring-catch is then forced out by the pressure of the spring *k* upon the lever E into the groove *c* of the tube, thereby locking the cylinder in place. The pump is then worked by raising and lowering the rope, the ascent of the plunger being produced by the upward movement of the rope, and the descent by its own weight aided by the weight H. In this operation the plunger must not be raised high enough to strike the lever E; but when it is desired to bring up the pump the rope is drawn steadily and continuously upward, and the plunger then, coming in contact with the lower arm of the lever E, throws back the upper arm and makes it draw the bolt D out of the groove *c*, thereby liberating the pump-cylinder from the tube A, and the continued upward movement of the rope draws up the pump through the tube.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a pump bucket or plunger operated by a rope or chain, of a weight, H, arranged above the pump-cylinder and constructed and applied within the well-tube, substantially as herein described, to serve the purpose not only of assisting the downward stroke of the plunger, but that of a guide to the bucket or plunger.

2. The spring-catch, constructed and applied to the pump-cylinder and arranged in relation with a groove, *c*, in the well-tube and with the pump bucket or plunger substantially as herein described, whereby it locks the pump-cylinder in the well-tube during the pumping operation, but unlocks the said cylinder to permit the withdrawal of the whole pump from the tube by raising the bucket or plunger to a certain point, as herein set forth.

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Witnesses:

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