

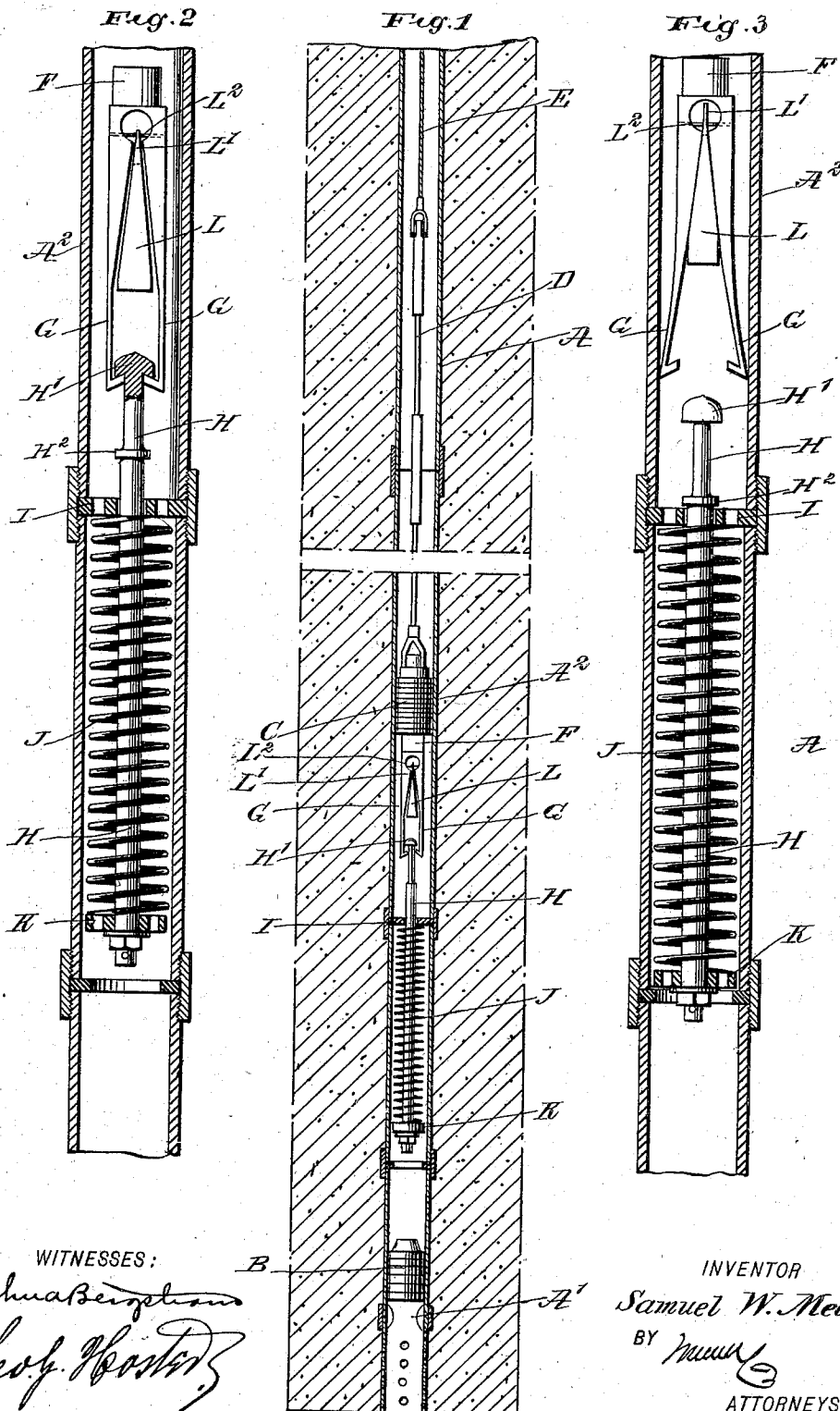
No. 708,897.

Patented Sept. 9, 1902.

S. W. MEALS.
OIL WELL PUMP.

(Application filed Feb. 10, 1902.)

(No Model.)



UNITED STATES PATENT OFFICE.

SAMUEL WILBERT MEALS, OF WAYNESBURG, PENNSYLVANIA.

OIL-WELL PUMP.

SPECIFICATION forming part of Letters Patent No. 708,897, dated September 9, 1902.

Application filed February 10, 1902. Serial No. 93,357. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL WILBERT MEALS, a citizen of the United States, and a resident of Waynesburg, in the county of Greene and State of Pennsylvania, have invented a new and Improved Oil-Well Pump, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved oil-well pump which is simple and durable in construction, arranged to dispense with the sucker-rods now employed, and to permit a single operator to readily pull the valve-plunger up for repairs to the valve-cups in a comparatively short time and to avoid all danger of clogging up a well and consequent abandonment thereof on dropping the sucker-rods, as so frequently happens in oil-pumps as heretofore constructed.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement applied. Fig. 2 is an enlarged sectional side elevation of part of the improvement; and Fig. 3 is a similar view of the same, showing the spring device disconnected from the valve-plunger.

The oil-well casing A is provided in its lower portion with the usual valve-seat A' for the standing valve B, and a distance above this lower portion of the well-casing is arranged the barrel A², in which reciprocates the valve-plunger C, connected by weighted rods D with a wire line E, extending up through the oil-well casing to connect with the usual walking-beam for imparting an upstroke to the plunger C. The downstroke of the plunger is produced by a spring device located between the plunger C and the standing valve B, and for this purpose the lower end of the plunger C is provided with a depending rod F, carrying spring-hooks G, adapted to engage the head H' of a rod H, extending loosely in a washer I, held in the oil-well casing A, as plainly shown in the drawings.

A spring J is coiled on the rod H below the washer I, and the upper end of this spring abuts against the washer I and rests with its lower end on a washer K, held on the lower end of the rod H. Now when the hooks G are in engagement with the head H' and the walking-beam imparts an upward movement to the wire line E then the plunger C is given its upward stroke, and in doing so the spring-hooks G pull on the head H' and move the rod H upward against the tension of the spring J. When the walking-beam is on the downstroke, then the previously-compressed spring J exerts a downward pull on the rod H, hooks G, and plunger C to impart a downstroke to the latter.

It is understood that in the oil-well pumps as heretofore constructed the weight of the heavy plunger-rods caused a downward movement of the plunger C; but in my invention the wire line is too light to produce such movement of the plunger; but the spring device readily accomplishes the object, it being understood that the spring device forms a permanent part in the lower portion of the well-casing. Now when it is desired to withdraw the plunger from the oil-well casing for repairs and the like it is necessary to disconnect the spring-hooks G from the head H' to allow of drawing the plunger upward by the wire line. Now for the purpose mentioned I provide a wedge L between the shanks of the spring-hooks G, the apex end of the wedge having an elongated eye L', through which extends a pin L², held on the upper end of the spring-hooks. Now normally the wedge L is in the position as shown in Figs. 1 and 2, so that the spring-hooks G by their own resiliency engage the head H' to permit working the oil-well, as previously described, and when it is desired to disconnect the spring-hooks G from the head H' then the wire line E is disconnected from the walking-beam and is allowed to drop suddenly, so that the spring J pulls the plunger C and rod H until a shoulder H² rests on the washer I, and the weighted rods D impart a further downward movement to the plunger C, so that the base end of the wedge L finally comes in contact with the top of the head H' to interrupt the downward movement of the wedge, while the plunger and

depending parts move still farther down, whereby the wedge L spreads the spring-hooks G apart and disengages the hooks from the head H'. The wedge L now assumes the position shown in Fig. 3. The operator now pulls on the wire line E to draw the plunger-hooks G and wedge L upward out of the oil-well casing for repairs or other purposes.

Previous to reinserting the withdrawn parts after the repairs have been made it is necessary to disengage the wedge L from its last position, so that the hooks G can move into a closed position for engagement with the head H' when passing back down into the well-casing, the wedge L then again standing in the position shown in Figs. 1 and 2. Now it is evident that when the plunger is reinserted in the well-tubing and passed down the same then the spring-hooks G finally engage the head H' to again connect the spring device with the plunger for imparting a downstroke to the plunger, as above explained.

It is evident that the weighted rods D are simply to increase the weight of the line E and the pressure on the top of the plunger C for moving the plunger down in the well-tubing for disconnecting the plunger from the spring device, as above explained.

By the arrangement described it requires but a single operator to pull up the plunger, as the heavy sucker-rods heretofore employed are completely dispensed with.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An oil-well pump having a plunger, a spring device in the well, means carried by the plunger for engaging said spring device, and a disengaging device for said means, as set forth.

2. An oil-well pump having a plunger, a spring-pressed rod below the plunger, a device carried by the plunger for engaging said rod, and means for disengaging said device, as set forth.

3. An oil-well pump having a valved plunger carrying spring-hooks at its lower end, a wire line connected with the plunger, and a spring device located between the plunger and the standing valve for imparting a downstroke to the plunger, the said spring device being adapted to be engaged by the said spring-hooks, as set forth.

4. An oil-well pump having a plunger, a wire line connected with the plunger, a spring de-

vice for imparting a downstroke to the plunger, the said spring device being a permanent fixture of the lower portion of the well-casing and comprising a spring-pressed rod for detachable connection at its upper end with the said plunger, and a weight on the said line, as set forth.

5. An oil-well pump having a plunger, a spring device in the well-tubing below the plunger and comprising a washer held in the tubing, a rod extending loosely through said washer, a spring held on said rod and abutting at its upper end against said washer, and means carried by the plunger for engaging said rod, as set forth.

6. An oil-well having a plunger, a spring-pressed rod in the well, hooks carried by the plunger and engaging the said rod, and means adapted to engage the rod, to move the said hooks out of engagement with the rod, as set forth.

7. An oil-well pump provided with a plunger, spring-hooks carried by the plunger, and a wedge supported on the spring-hooks and having a slidable movement thereon, to open the spring-hooks on the wedge striking a fixed part, as set forth.

8. An oil-well pump provided with a plunger, spring-hooks carried by the plunger, a wedge supported on the spring-hooks and having a slidable movement thereon, to open the spring-hooks on the wedge striking a fixed part, and a spring-pressed rod in the oil-well, having a head adapted to be engaged by the said hooks and by the said wedge, as set forth.

9. An oil-well pump provided with a plunger, spring-hooks carried by the plunger, a wedge supported on the spring-hooks and having a slidable movement thereon, a guide held in the well-casing, a rod extending loosely through said guide and provided with a shoulder above the same, the said rod having a head at its upper end adapted to be engaged by the said hooks and by the said wedge, a spring coiled on the rod below the guide and exerting downward tension on the rod, and a weighted line connected with the plunger, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL WILBERT MEALS.

Witnesses:

WM. A. EARLEMAN,
J. E. MONROE.