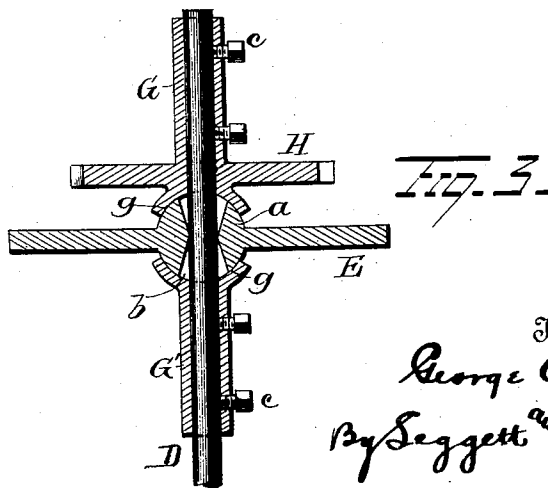
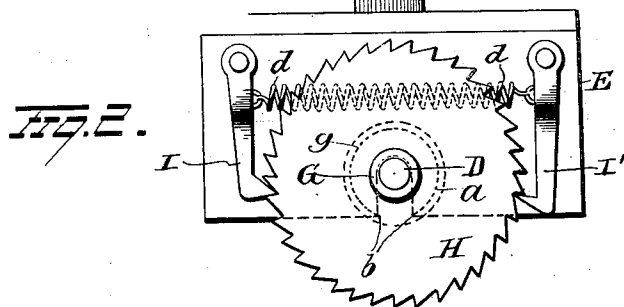
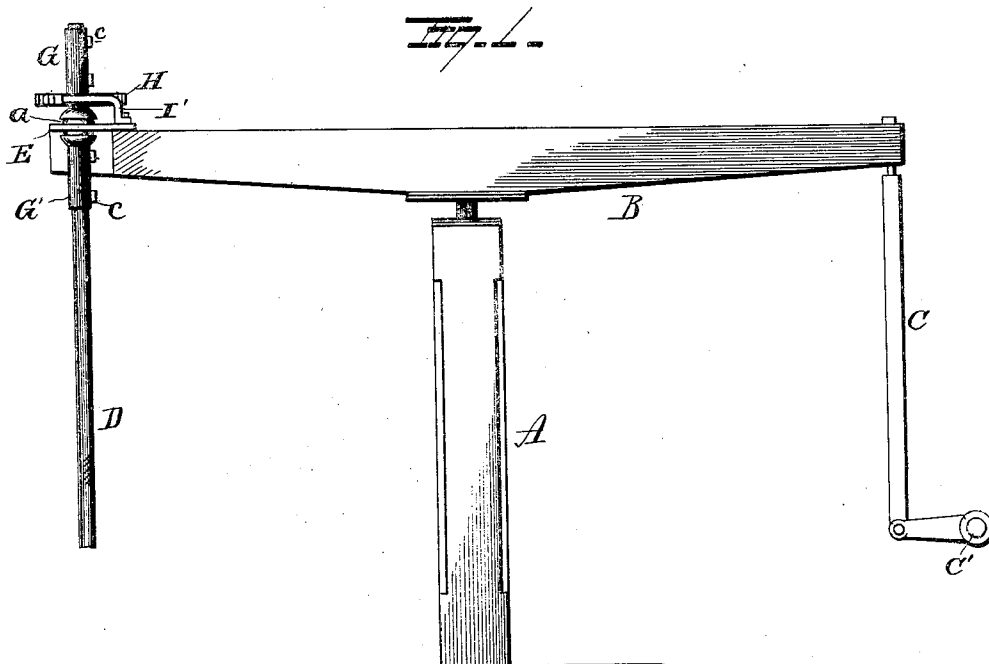


(No Model.)

G. ALLEN.
PUMP FOR OIL WELLS.

No. 480,701.

Patented Aug. 16, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE ALLEN, OF FRANKLIN, PENNSYLVANIA.

PUMP FOR OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 480,701, dated August 16, 1892.

Application filed October 23, 1891. Serial No. 409,587. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ALLEN, of Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Pumps for Oil-Wells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in pumps for oil-wells, and more particularly to devices for automatically revolving the polish-rod or sucker-rod while the pump is in operation. It frequently happens that the heavier parts of the oil settle on the rod, causing the latter to stick, and consequently seriously interfere with its free operation. When this occurs, the rods have to be withdrawn and the adhering matter removed, and as some wells are several thousand feet deep the time and labor involved in cleaning the rods adds considerable to the expense of operating the well. It has been found that by giving the rods an occasional turn it breaks or disengages the paraffine or adhering matter and the rod will work for a greater length of time without removal for the purpose of cleaning same; and the object of this invention is to provide devices for automatically giving the rod a part rotation at each movement of the walking-beam; and it consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of a portion of a pump embodying my invention. Fig. 2 is a plan view of the rod-actuating devices, and Fig. 3 is a view in vertical section through the upper end of the rod.

A represents an upright post carrying at its top the walking-beam B, which latter is vibrated by the pitman C and crank-shaft C' and actuates the rod D. To the free end of the beam B is secured a metal plate E, provided at its front edge, at a point preferably midway between its ends, with a spherical enlargement *a*, which latter projects equally above and below the plate and is provided with open vertical slot *b*, extending from its outer edge to a point equal to one-half the diameter of the rod D beyond the center of

the enlargement *a*. This brings the polish or other rod D directly in the center of the sphere when the parts are assembled. The polish or other rod D is properly adjusted and secured to the plate E by the sleeves G and G', the former of which is secured to the polish or other rod D at a point above the sphere *a*, while the lower one G' is secured to the rod below the sphere. Each sleeve carries at one end a socket *g*, shaped to conform to the shape of the sphere, and hence it will be seen that when the sleeves carrying the sockets are assembled on the rods, with the sockets *g* in contact with the upper and lower sides of the sphere, a ball-and-socket joint is formed which permits the rod to have free play or movement. The sleeves are secured to the rod by set-screws *c*, and hence can be easily and quickly applied and adjusted as necessity demands. One of the sleeves, and preferably the upper one G, is provided with a ratchet-wheel II, cast integral with the sleeve or rigidly secured thereto and engaged by the pawls I and I', the former of which is a spur for engaging the teeth of the ratchet, while the latter is provided with a hook adapted to engage the teeth. The pawls are located on opposite sides of the ratchet and are held in contact with same by springs *d*. The rod D moves vertically while the walking-beam vibrates, and hence it follows that as the end of the walking-beam carrying the rod moves upwardly the ratchet-wheel II is moved slightly away from the pawls and as the walking-beam moves downwardly the wheel approaches the pawls, and as one pawl is provided with a spur end adapted to engage the teeth and push same forward and the other with a hook it follows that as the wheel moves toward and away from the pawls it is engaged first by one pawl end then by the other and given a slight rotary motion by each. The center of motion of the polish-rod is the sphere, and as the wheel is several inches above the sphere it follows that on the downstroke of the walking-beam the wheel moves toward the pawls and is given a slight turn by pawl I and as it moves away from the pawls on the upstroke the hook-pawl I' engages the teeth and holds the circumference of the wheel, while the center thereof is carried forward. This gives the wheel another part turn in the same direction,

and so on indefinitely, thus preventing the adhesion of paraffine to the rod from interfering with the free operation of the rod.

Sucker-rods are made in sections, and from
 5 twenty-five to seventy-five of these sections
 are used in each well. These rods frequently
 come unscrewed while working, causing con-
 siderable trouble to get them out. A slow ro-
 10 tation in the direction that they screw to-
 gether would prevent this entirely. Again,
 where the rods do not rotate portions of the
 rods, generally at the enlarged metal joints,
 move constantly in one place against the in-
 15 side of the tubing and in a short time wear
 through the tube. A revolution of the rods
 will distribute this wear all around the inside
 of the tubing, and thus prevent serious in-
 jury.

I can, if so desired, employ this device in
 20 connection with drills and other devices hav-
 ing a vertical movement and a slow rotary
 movement, and hence I would have it under-
 stood that I do not confine its application to
 pumping apparatus, nor do I limit myself to
 25 the constructions shown and described, but
 consider myself at liberty to employ it wher-
 ever it can be used to advantage and to make
 such changes as fairly fall within the spirit
 and scope of my invention.

30 Having fully described my invention, what
 I claim as new, and desire to secure by Letters
 Patent, is—

1. The combination, with a walking-beam
 and a spherical bearing thereon having a
 35 double conical opening formed therein, of a

polish-rod and sleeves secured on the rod
 above and below the spherical bearing, said
 sleeves provided with concave bearings adapt-
 ed to receive and form sockets for the spheri-
 cal bearing, substantially as set forth. 40

2. The combination, with a walking-beam,
 a polish-rod, and a spherical bearing on the
 beam, of concaved sockets on the rod on each
 side of the spherical bearing, adapted to re-
 45 ceive the latter, a ratchet-toothed wheel inte-
 gral with one of the sockets, and a pawl or
 pawls on the beam in position to engage the
 toothed wheel, substantially as set forth.

3. The combination, with a walking-beam,
 a plate thereon, a rod, and sleeves secured to
 the rod and engaging the plate, of a toothed
 wheel secured to the rod and a pawl carried
 by the beam and engaging the wheel. 50

4. The combination, with a walking-beam,
 a plate thereon having a slotted spherical 55
 bearing, a rod passing through the slot, and
 sleeves secured to the rod, each having a
 curved or saucer-shaped end for engaging said
 spherical bearing, one of said sleeves having
 a toothed wheel rigid thereon, of pawls car- 60
 ried by the walking-beam and engaging said
 wheel, substantially as set forth.

In testimony whereof I have signed this
 specification in the presence of two subscrib-
 ing witnesses.

GEORGE ALLEN.

Witnesses

CHARLES H. HARRIS,
 A. H. MCDOWELL.