

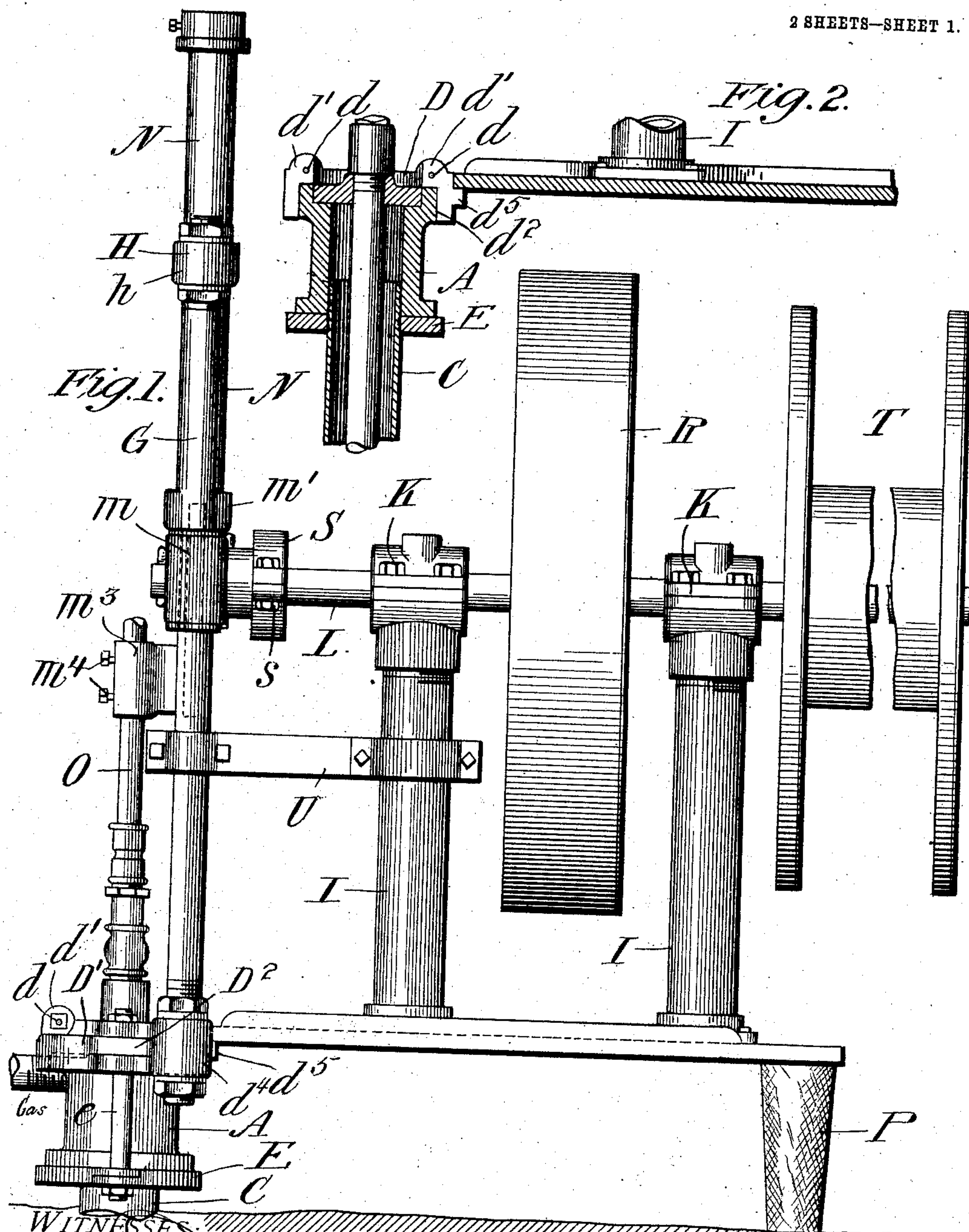
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PATENTED MAR. 31, 1908.

H. G. BARCROFT & W. H. CRAWFORD.
PUMPING APPARATUS FOR OIL WELLS.

APPLICATION FILED APR. 19, 1907.

2 SHEETS—SHEET 1.



WITNESSES

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UNITED STATES PATENT OFFICE.

HOMER G. BARCROFT AND WILLIAM H. CRAWFORD, OF BRADFORD, PENNSYLVANIA.

PUMPING APPARATUS FOR OIL-WELLS.

No. 883,612.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed April 19, 1907. Serial No. 369,109.

To all whom it may concern:

Be it known that we, HOMER G. BARCROFT and WILLIAM H. CRAWFORD, citizens of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Pumping Apparatus for Oil-Wells; and we 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.

Our invention consists in the novel features hereinafter described reference being had to the accompanying drawings which illustrate one form in which we have contemplated embodying our invention and the invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a side elevation of an apparatus for pumping oil wells, embodying our invention, in operative condition. Fig. 2 is a partial vertical sectional view of the base portion of the apparatus and the casing head of an oil well to which it is attached. Fig. 3 is a front view of the apparatus, the casing head and adjacent parts being shown in section. Fig. 4 is a horizontal section on line 4—4 of Fig. 2.

The object of our invention is to provide a compact and simple pumping apparatus for use in pumping oil wells, or for other purposes for which it may be found desirable, which can be readily placed in operative position, and which can be quickly dismantled in part to permit of drawing the pumping rods, or other operation requiring access to the oil tube or well casing.

In carrying out our invention we provide a supporting base or frame, which can be rigidly secured to the casing head, of the well, at one end, and at the other end may be supported upon a pile, or post or other convenient support, said base or frame carrying all the working parts of the apparatus.

In the drawings A represents the casing head, of an oil well, C the casing, the upper end of which is screwed into the casing head, and B is the oil pipe, all of usual construction.

D, D' represents a yoke made in two parts and connected by bolts d passing through ears d' , said yoke having a recess d^2 on its lower face which fits down over the top of the casing head as clearly shown in Figs. 2

and 3. The yoke D D' is provided with two laterally extending arms D^2 D^2 extending angularly therefrom so that both lie on the same side of a line passing through the center of the yoke, and said arms are provided with reinforcing webs above and below to give them the required strength. At the outer end of each of said arms is a boss d^4 provided with a circular vertical aperture. The said yoke is also provided on one side with a horizontal web or flange d^5 indicated in dotted lines Fig. 4, which connects the arms D^2 D^2 . The yoke D, D' is held firmly in position upon the casing head preferably by bolts e e which pass through bolt holes in the yoke and through bolt holes in the overlapping portions of a divided clamping ring E, which encircles the casing C, below the casing head A.

F represents the base plate which is bolted to the web d^5 of the yoke D D' at f f and has its outer end supported in any desired manner, for example by means of a pile or post P driven into the ground, as shown in Fig. 1, thus giving the base plate a very firm and rigid support.

G, G represent a pair of vertical guide rods, which may be formed of iron or steel rods or heavy tubing, threaded at their upper and at their lower ends. The lower ends of said rods extend through the bosses d^4 d^4 and are rigidly but detachably secured thereto by its nuts above and below said bosses as shown. The upper ends of said rods are united rigidly by a cross brace H provided at each end with a perforated boss h through which the upper ends of the rods extend, and said rods are provided with nuts above and below said bosses, thus forming a strong vertical frame.

M represents a cross head, preferably formed of a single casting provided at each end with a perforated boss m having a sliding engagement with one of the guide rods G and provided at its upper edge intermediate said rods, with a boss m' having a threaded aperture therein, into which is screwed an auxiliary guide rod (or tube section) N, which extends upward through a guiding collar h' in the center of the cross brace H. The cross head M is also provided with a horizontal slot m^2 , having its end portions preferably curved, and the lower central portion of the cross head is provided with a sleeve m^3 , provided with a set screw or set screws m^4 m^4 or other securing means, for adjustably securing therein the pump rod O.

I, I represent two vertical bearing supports

or standards, preferably formed of heavy tubing having their lower ends rigidly secured to the base plate F and provided with bearings K, K at their upper ends, to receive a crank shaft L. The shaft L is provided, preferably between said standards I, I with a band wheel R, and said shaft is also provided with a detachable crank arm S preferably split where it engages the shaft, as shown and clamped thereto by means of a bolt s and said crank may also be keyed to the shaft as shown. The outer end of the crank arm S is provided with a crank pin s' extending through the slot m^2 of the cross head and provided with a friction roller s^2 , secured detachably thereon by a collar s^3 or in any other desired way. The outer end of shaft L is preferably provided with a reel T, for pulling the pump or sucker rods, or for other purposes when desired.

In order to further stiffen the construction, we prefer to provide the lateral strap braces U U (see Figs. 1, 3 and 4) connected to the guide rods G G below the stroke of the cross head M, and having their ends bent to half encircle one of the bearing standards I, and secured thereto by bolts passing through said strap braces, as shown.

In operating the pumping apparatus, an engine or other suitable motor is connected with the crank shaft by means of a belt passing around the pulley, or band wheel R and the rotary movement of the crank will impart a vertical reciprocating movement to the cross head, and pump rod as will be readily seen. When it is desired to have access to the oil tube for the purpose of drawing the sucker rods, or for other purposes, the guide rods G G can be removed from the base by unscrewing the nuts, beneath the bosses d^4 d^4 , removing the cotter s^3 , and disconnecting the pump rod from the cross head sleeve m^3 , and the crank can be removed from the crank shaft, thus leaving the oil tube and the top of the casing head exposed. The shaft L and reel T can then be operated for the purpose of drawing the sucker rods or for any other purpose for which a reel or drum may be required.

What we claim and desire to secure by Letters Patent is:—

1. In a pumping apparatus, the combination with a base plate disposed perpendicularly to the well casing, and having one end provided with means for securing it to the well casing, and its other end supported independently of and at a distance from the casing, a vertically disposed frame, secured to said base plate adjacent to the well casing, a vertically movable cross-head mounted on said frame and having means for detachably engaging the pump rod, a horizontal shaft mounted on said base plate, and disposed perpendicularly to said frame, operative connections between said shaft and said cross

head for reciprocating the latter and means for rotating said shaft, substantially as described.

2. In a pumping apparatus, the combination with a base plate disposed perpendicularly to the well casing, and having one end provided with means for securing it to the well casing and its other end supported independently of and at a distance from the casing, a stationary vertically disposed frame rigidly, but detachably secured to said base plate, adjacent to the well casing, a vertically disposed cross head, mounted on said frame, and provided with means for detachably engaging the pump rod, a horizontal shaft mounted upon said base plate, and disposed in a radial line with respect to the casing, and perpendicular to the said vertically disposed frame, and a detachable eccentric part, on said shaft, operatively engaging the cross head, substantially as described.

3. In a pumping apparatus for driven wells, the combination with a yoke formed in two parts and provided with a cap portion for fitting over the upper part of a casing head, and having laterally extending supporting arms, and means for securing said yoke rigidly to the casing head, of vertical guide rods secured to and supported by said lateral arms, a base plate having one end secured to and supported by said yoke, said plate extending perpendicularly from said guide rods, and having its other end supported at a distance from and independently of said casing head, a cross head mounted on said guide rods, and provided with a sleeve for engaging a pump rod, and a horizontally disposed slot, adjustable securing devices for connecting a pump rod to said sleeve, a horizontal shaft mounted on said base plate, and disposed in a radial line with respect to the casing head, a crank on one end of said shaft, detachably secured thereto, a crank pin on said shaft engaging the slot in said cross head, and means for driving said shaft, substantially as described.

4. In a pumping apparatus for driven wells, the combination with a yoke formed in two parts and provided with a cap portion for engaging the top portion of the casing head, and laterally extending arms, both of said arms having their outer ends lying on the same side of a line passing through the center of said cap portion, a clamping ring for engaging the lower end of said casing head, bolts connecting said ring to said yoke, vertical guide rods detachably secured to said lateral arms, a cross head engaging said guide rods and provided with means for attaching a pump rod, a horizontal base plate having one end rigidly connected to said yoke, and extending away from the yoke and having its other end supported at a distance from and independently of the yoke, a driving shaft mounted in bearings supported on

said base plate, and connections between said shaft and said cross head, substantially as described.

5 In a pumping apparatus for driven wells, the combination with a base comprising a divided portion constructed to engage the top of a casing head, means for connecting the parts of said divided portion rigidly together, and a horizontal base plate having
10 one end rigidly connected to said divided portion, said plate extending away from said yoke and having its other end supported at a distance from and independently of said yoke, a horizontal shaft mounted on said
15 base, a vertical frame detachably mounted

on said base, adjacent to the casing head, a cross head engaging said vertical frame, provided with a horizontal slot, and a device for engaging a pump rod, and a crank detachably secured to said horizontal shaft, and 20 having a crank pin engaging said slot, substantially as described.

In testimony whereof we affix our signatures, in the presence of two witnesses.

HOMER G. BARCROFT.

WILLIAM H. CRAWFORD.

Witnesses:

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