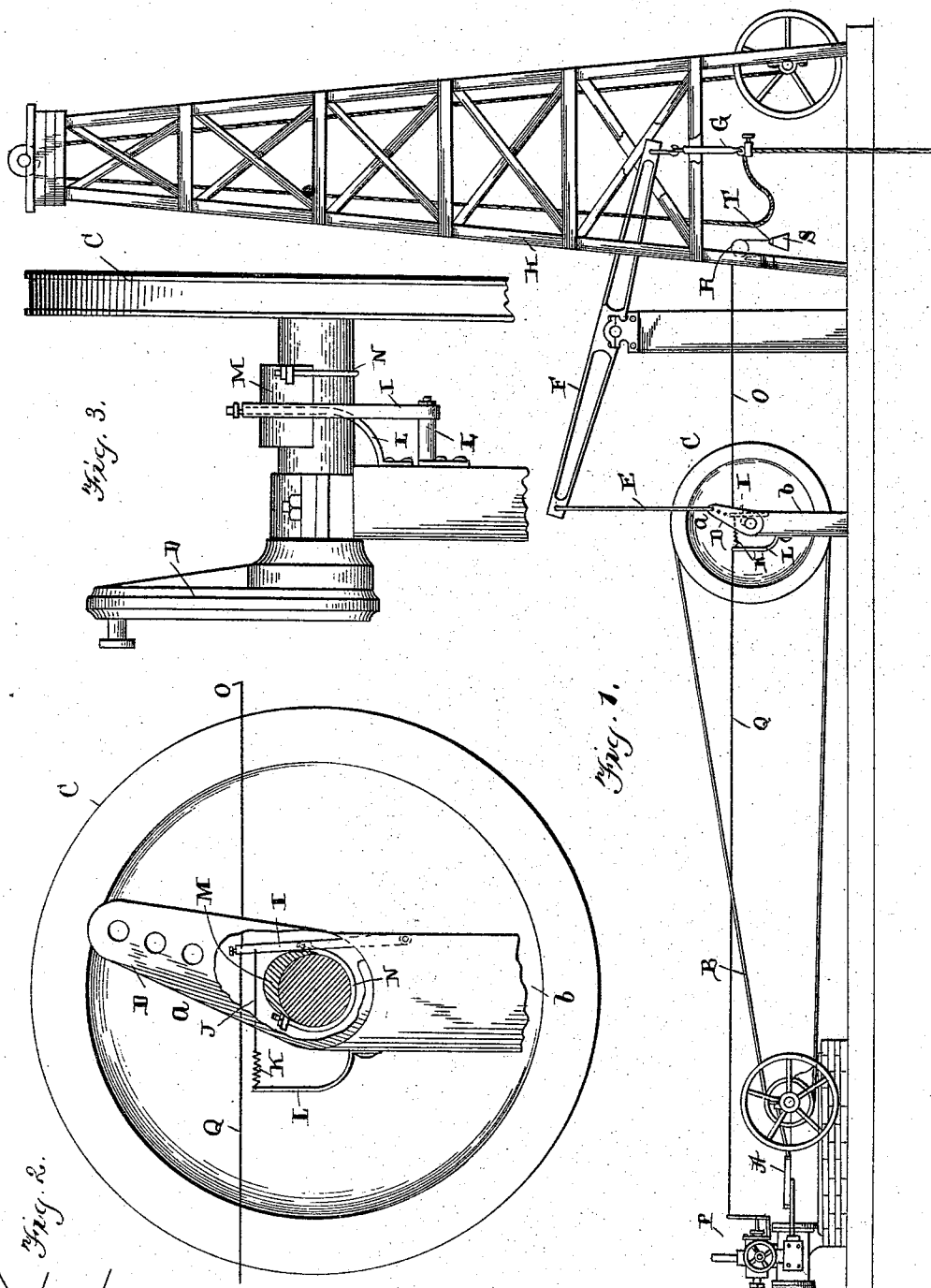


(No Model.)

C. F. RIGBY.
OIL WELL MACHINERY.

No. 532,338.

Patented Jan. 8, 1895.



WITNESSES
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UNITED STATES PATENT OFFICE.

CLARK FREE RIGBY, OF NEW CASTLE, PENNSYLVANIA.

OIL-WELL MACHINERY.

SPECIFICATION forming part of Letters Patent No. 532,338, dated January 8, 1895.

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To all whom it may concern:

Be it known that I, CLARK FREE RIGBY, of New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Oil-Well Machinery; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in oil well machinery, and it consists in the construction and arrangement of parts which will be fully described hereinafter, and particularly pointed out in the claims.

This improvement relates to that class of oil well machinery which embodies a walking beam having one end driven by a suitable engine, and the other end attached to the rope for drilling or pumping purposes. In this class of machinery the engine makes several revolutions to every movement of the walking beam, and owing to the fact that the engine is exerting as much power on the down movement of the walking beam as it is on the upward movement thereof, the tools are lifted with a jerk breaking jars and cable often, and when there is a long cable in the well, the cable stretches and does not lift the tools off the bottom of the well, and the engine runs away on the stretch of the cable, and there is a great waste of steam.

The object of my invention is to provide an automatic cut-off for the engine whereby steam is applied thereto only as the pumping or lifting end of the walking beam is being raised, so that this sudden lifting and jerking upon the cable is prevented and a great saving in steam effected.

In the accompanying drawings, Figure 1 is a side elevation of a machine which embodies my invention showing it applied to the usual oil well structure. Fig. 2 is a detached view of the shaft carrying a band wheel and a crank for operating the walking beam, and the attachment for automatically cutting off and admitting steam to the engine. Fig. 3 is a side view of the parts shown in end view in Fig. 2.

Referring to the drawings, in which similar

letters indicate like parts, A indicates an engine of any ordinary size; B, the band which passes around the driving wheel of the engine and also around a band wheel C journaled a suitable distance from the engine. This band wheel C is carried by a shaft having a crank D, to which a link E, is connected, the opposite end of the link E being connected with one end of an intermediately pivoted walking beam F. The opposite end of this walking beam is connected through the medium of a suitable connection G with the drilling or pumping connection of the well.

H is the tower or structure directly over the well which supports the drilling or pumping rope as the case may be, in the usual manner and need not be more fully described in this connection.

A cam M is secured to the shaft of the wheel C by means of a curved rod N which has its ends bolted thereto. By means of this construction the cam M can be held upon the shaft in any desired relative relation to the crank D as will be readily understood.

A lever I has its lower end pivotally supported at one side of the shaft of the wheel C, and its upper end is connected by means of a cord, wire or chain Q to the throttle P of the engine. The upper end of this lever I is connected with a spring K by means of a connection J, and this spring K is held by means of a bracket L, as clearly shown in Figs. 1 and 2. The tension of this spring K normally holds the lever I in contact with either the shaft or the cam M as the same revolves.

The band wheel C is revolving in the direction indicated by arrows through the medium of the belt B from the engine, and when the cam M comes in contact with the lever I it is forced to the right, thus drawing upon the connection Q and admitting steam to the engine by operating throttle P. When the cam has passed by this lever I the outer end of the walking beam will have been raised its limit, and then the lever I is gradually allowed to be drawn inward by the spring, and the throttle P of the engine closes to cut off steam during the revolution of the crank G from the point b to the point a, as indicated in Figs. 1 and 2. Owing to this construction it will be readily understood that steam

is admitted to the engine only during the upward movement of the outer end of the walking beam, as the drilling or pumping attachment is being raised, and that steam is cut off
 5 from the engine during the other half of the revolution of the crank D, which will prevent the engine from running away and from giving sudden jerks upon the cable, thus either breaking the same or causing it to stretch
 10 when very long.

For the purpose of admitting steam continuously when the drilling or pumping attachment is being entirely removed from the well, or when tubing is removed for any purpose,
 15 a connection O has one end connected with the lever I at the opposite side from the connection Q, over a sheave or wheel R journaled upon the tower H, and has attached thereto a weight S. This weight S is heavier
 20 than the tension of the spring K, so that when the weight is unhooked from a hook T upon the tower, and permitted to draw upon the ligament or connection O, it will overcome the tension of the spring K and hold the lever
 25 from contact with the shaft, thus holding the throttle of the engine open continuously until the rope is entirely withdrawn from the well.

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

1. In a well drilling or pumping machine, the combination of a walking beam, a shaft carrying a crank connected with one end of
 35 the walking beam, a wheel upon said shaft, an engine, a belt or gearing connection between the engine and the said wheel, the engine throttle, and a cam mechanism operated by the wheel shaft which is connected with
 40 the engine throttle, substantially as described.

2. In a well drilling or pumping machine, the combination with an engine, a shaft carrying a crank and a band wheel, a walking
 45 beam, a connection between one end of the walking beam and the said crank, a belt connecting the driving wheel of the engine and the said band wheel, a cam upon said shaft,

and an operating lever actuated by the said cam and connected with the engine throttle, substantially as specified.

3. In a well drilling or pumping machine, the combination of an engine, a walking beam, a shaft carrying a crank connected with one end of the walking beam and also
 55 a band wheel, a belt connection between the engine and the said band wheel, a cam upon the shaft at the same side as the said crank, and the connection with the engine throttle operated by the said cam, whereby steam is
 60 admitted upon the downward stroke of the crank, and the upward stroke of the opposite end of the walking beam for the purpose set forth.

4. In a well drilling or pumping machine, the combination of an engine, a shaft carrying
 65 a crank, a walking beam having one end connected with the crank, a band wheel upon the said crank shaft, a lever having one end pivotally supported near the said shaft, a cam upon the shaft adapted to engage the
 70 said lever, a connection between the lever and the engine throttle, and a spring for normally holding the lever in contact with the shaft, and cam, substantially as specified.

5. In a well drilling or pumping machine, the combination of an engine, a shaft carrying
 75 a crank, a walking beam having one end connected with the said crank, a band wheel and a cam upon the said crank shaft, a lever having one end pivotally supported near the
 80 shaft and adapted to be operated by the said cam, a spring for normally holding the lever in contact with the shaft or cam, a connection between the lever and the engine throttle, and a weighted connection adapted to
 85 draw the lever in the opposite direction, for the purpose substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CLARK FREE RIGBY.

Witnesses:

C. R. SNODGRASS,
 JAMES LANE.