No. 614,684. Patented Nov. 22, 1898.

W. WRIGHT.

PUMPING RIGGING FOR OIL WELLS.

(Application filed May 20, 1898.)

(No Model.) 3 Sheets—Sheet 1.

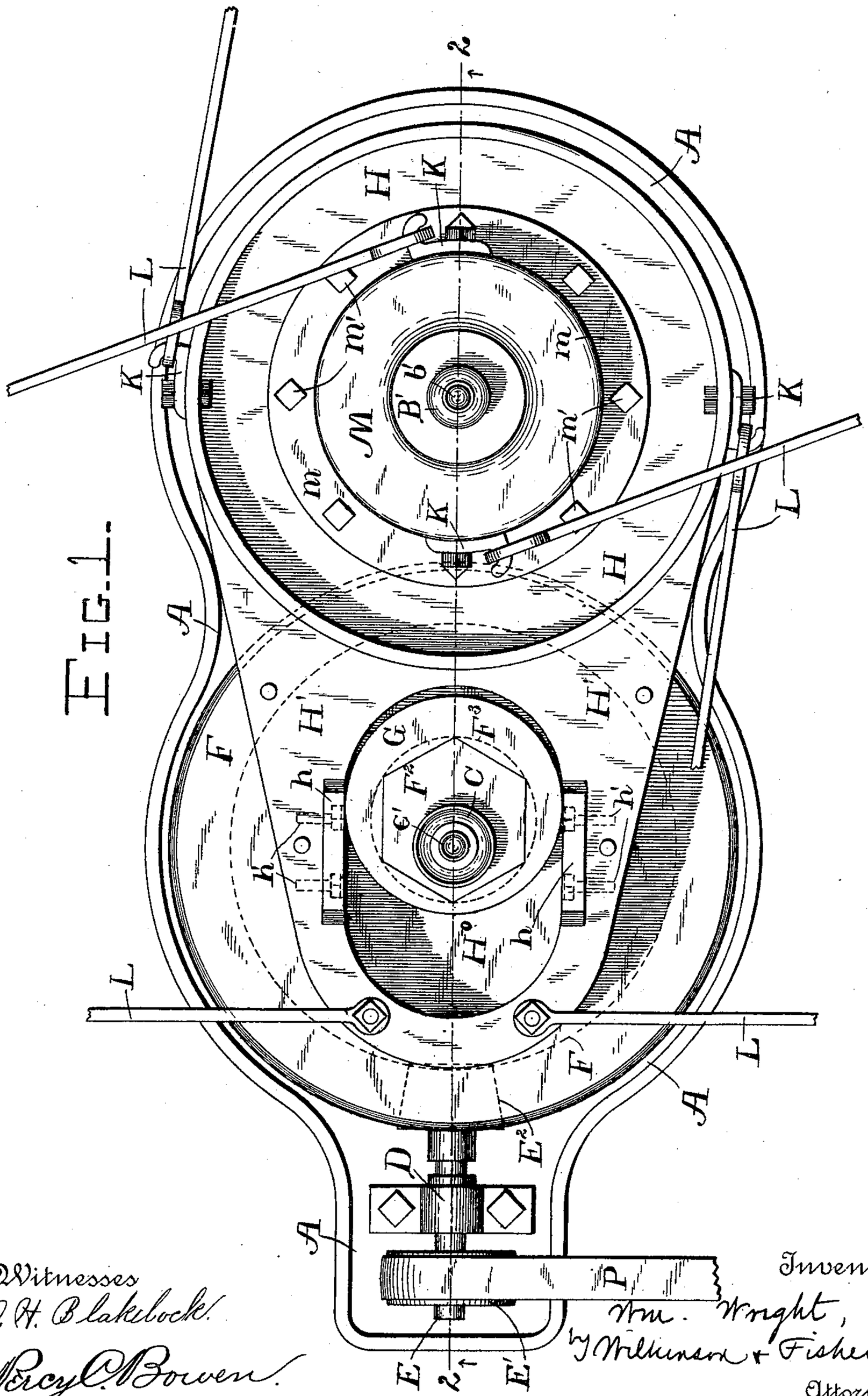

FIG. 1.

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FIG. 2.

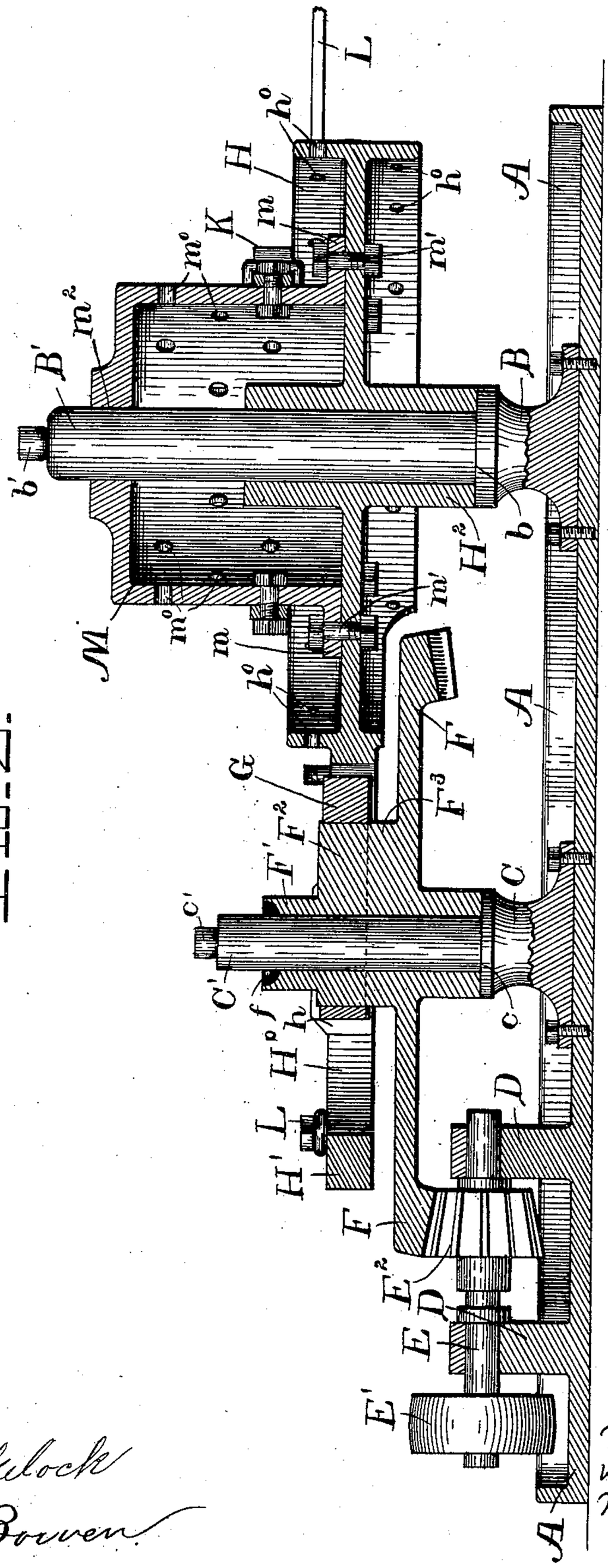

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FIG. 3.

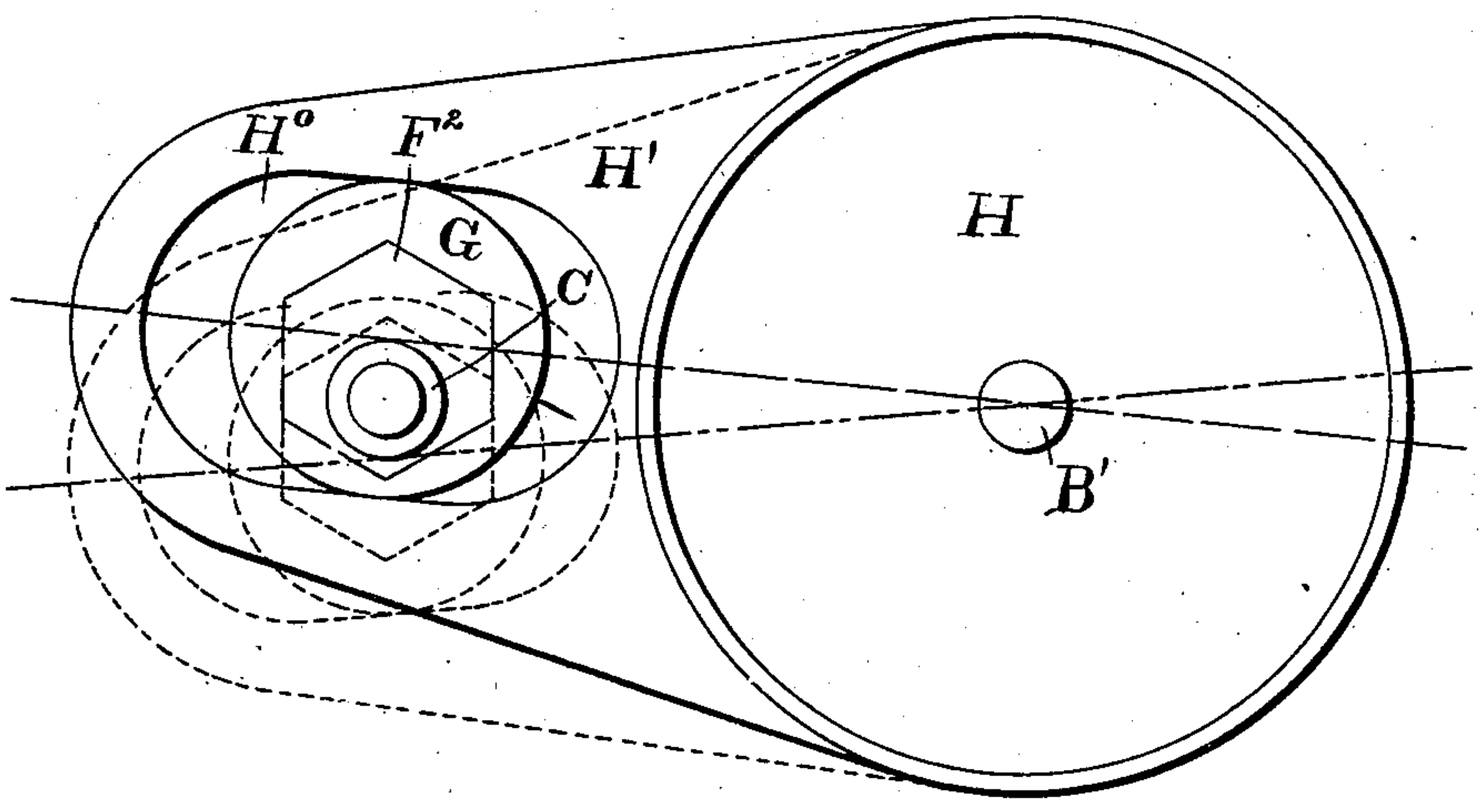


FIG. 4.

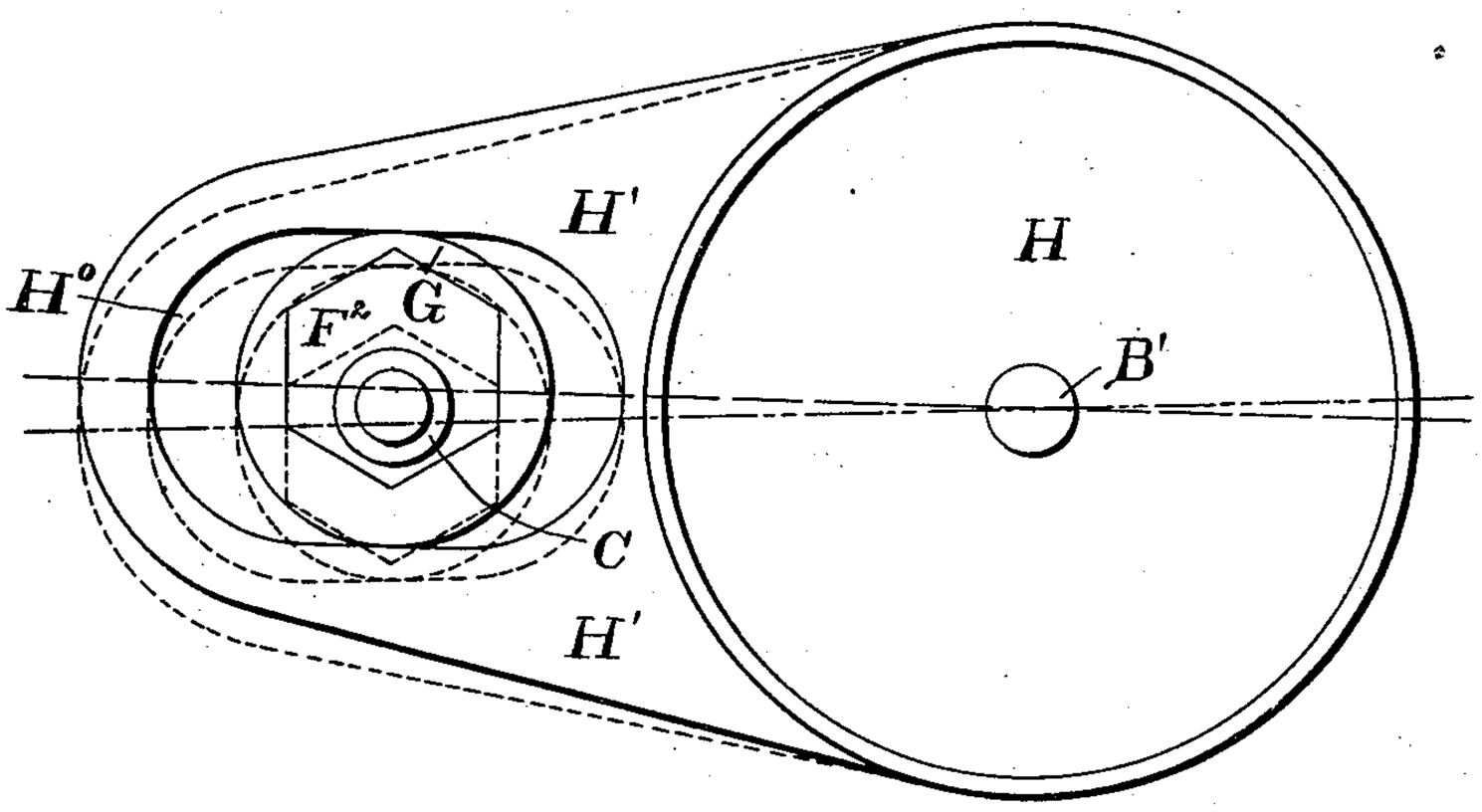
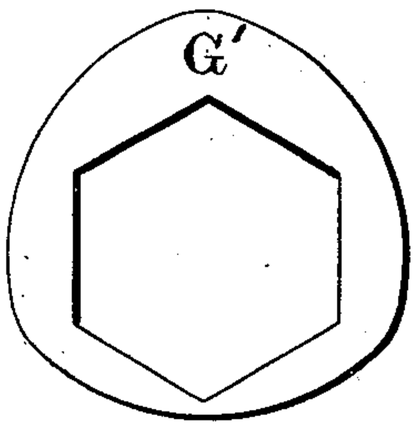


FIG. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM WRIGHT, OF FRANKLIN, PENNSYLVANIA.

PUMPING-RIGGING FOR OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 614,684, dated November 22, 1898.

Application filed May 20, 1898. Serial No. 681,235. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WRIGHT, a citizen of the United States, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Pumping-Rigging 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 improvements in pumping-rigging for oil-well pumps; and it consists in providing means whereby a number of pumps for oil-wells may be operated from a single shaft and whereby the stroke of the pumps may be readily varied when desired.

It is well known in the art that old wells do not flow as freely as the new and that in pumping old wells it generally becomes desirable to increase the length of the stroke of the pump, and part of my invention consists in providing suitable, simple, and effective means for accomplishing this result.

Furthermore, my invention also consists in improved means for replacing the parts most subjected to wear, and in general in providing a simple, cheap, and compact rigging well suited for the purposes for which it has been designed.

My invention will be understood by reference to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a plan view of my improved pumping-rigging. Fig. 2 represents a section along the line 2 2 of Fig. 1 and looking in the direction of the arrows. Fig. 3 is a diagram showing the angular vibration of the pull-wheel when the adjustable eccentric is placed in the position of maximum eccentricity. Fig. 4 is a similar diagram to that shown in Fig. 3, but illustrates the angular vibration of the pull-wheel when the adjustable eccentric is shifted to its position of minimum eccentricity; and Fig. 5 represents an adjustable cam which may be used in place of the adjustable eccentric shown in Figs. 1, 3, and 4.

A represents the bed-plate, which is secured to any suitable foundation (not shown) and on which are suitably mounted the pull-wheel shaft or pedestal B, the eccentric-shaft C, and the stanchion D for the driving-shaft E, the driving being accomplished by means of a pulley E′ and miter-gear E^2, fastened on the shaft E, though any other means of driving the apparatus may be adopted, if desired.

F represents a bevel-gear engaging in the miter-gear E^2 and provided with a sleeve or hub F′, journaled on the cylindrical portion C′ of the eccentric-shaft C and resting on the shoulder *c* of the said shaft. The upper portion of this sleeve F′ is cup-shaped, as at *f*, to facilitate lubrication, and the upper end of the shaft C is also preferably provided with an oil-cup *c*′. The hub F′ of the bevel-gear F is provided with an angular eccentric projection F^2. (Shown as hexagonal in Figs. 1, 3, and 4; but its sides may be in the form of any regular polygon.) Over this regular polygon slips the eccentric G or its equivalent cam G′, which is adjusted as will be hereinafter described. While both G and G′ represent what are in reality and generically cams, the word "eccentric" will be used to designate the former for the sake of clearness in the description. Beneath the polygonal lug F^2 is the eccentric-shoulder F^3, (shown in dotted lines in Fig. 1 and in full lines in Fig. 2,) and resting on this eccentric-shoulder is the eccentric G or cam G′. The eccentric or cam rotates in the opening H^0 in the extension H′ of the pull-wheel H. The wearing sides of this aperture are preferably provided with wear-plates *h*, secured in position by means of the countersunk tap-bolts *h*′, and by means of the eccentric or cam the necessary vibratory motion is imparted to the pull-wheel.

The pull-wheel is perforated, as at h^0, to allow the connection thereto of suitable hooks K or other means of connecting to the pull-wheel the rods or ropes L.

The pull-wheel is provided with an elongated hub H^2, engaging the cylindrical portion B′ of the fixed shaft B. In order to provide additional means for connecting a number of wells to the pull-wheel, a drum M may be connected to the web of the pull-wheel, as by the flange *m* and bolt *m*′, which drum is

journaled, as at m^2, on the shaft B and is perforated, as at m^0, for hooks K or other means of making connection with the various pumps.

The upper end of the shaft B′ is preferably provided with an oil-cup b'. It will be obvious that instead of the drum M, rigidly attached to the pull-wheel H, two or more separate pull-wheels may be mounted on the shaft B′ and that they may be operated by two or more sets of eccentrics or cams mounted on the shaft C; but this duplication of parts will readily suggest itself to any one skilled in the art and would not involve invention.

In order to increase or decrease the angular vibration of the pull-wheel, and consequently to increase or decrease the stroke of all the pumps connected thereto, I provide the removable and adjustable eccentrics shown in Figs. 1, 3, and 4 or cam shown in Fig. 5.

Referring first to the eccentric, if the eccentric be placed over the polygon, so as to insure the sum of eccentricity of the eccentric and the polygon, as shown in Fig. 3, the vibration of the pull-wheel will be a maximum, while if the eccentric be placed as shown in Fig. 4, with the eccentricity of the polygon opposed to the eccentricity of the eccentric, the throw of the eccentric and the consequent vibration of the pull-wheel will be a minimum, while any position of the eccentric between these two extremes will cause a greater or less vibration of the pull-wheels between the extremes noted. Thus by simply removing the eccentric and replacing the same after turning it through a greater or less angle the stroke of all the pumps may be increased or decreased within certain predetermined limits. Should it be preferred to have a cam motion proper instead of the eccentric motion shown in Figs. 1, 3, and 4, a cam, such as is shown in Fig. 5, may be used, and this cam may be adjusted on the polygon, as has already been described with reference to the eccentrics.

Another advantage of having these eccentrics thus removable and adjustable is the greater cheapness of substitution and repair when the parts become worn, creating lost motion and other inconveniences.

The apparatus may be driven by means of the belt P and pulley E′ from any suitable source of power, or rotation may be given to the shaft E in any other convenient way.

It will be noted that when the eccentric G or cam G′ is removed the eccentric-shoulder F^3 will bear against one of the wear-plates h and will vibrate the pull-wheels if the pressure on one side thereof is greater than on the other, as where pumps are worked on one side more than on the other or where greater force is required in working the pumps on one side than on the other. In this case the vibration of the pull-wheel is only one-half as great as if the eccentric F^3, having the same eccentricity, were to rotate in contact with both wear-plates, as is the case in the operation of the eccentric S. (Shown in Fig. 1.)

It will be obvious that various modifications might be made in the herein-described apparatus which could be used without departing from the spirit of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a pumping-rigging for oil-wells, the combination with a bed-plate and a vertical pull-wheel shaft or pedestal and a vertical eccentric-shaft mounted thereon, a pull-wheel journaled on the former shaft, and provided with a laterally-extending arm recessed as shown, a gear-wheel journaled on the latter shaft and provided with an eccentric-hub having its upper portion in the form of a regular polygon, a detachable cam adapted to slip over said polygon and to be held thereon, and to engage in said recess in the arm of the pull-wheel, with means for driving said pull-wheel, substantially as described.

2. In a pumping-rigging for oil-wells, the combination with a bed-plate and a vertical pull-wheel shaft or pedestal and a vertical eccentric-shaft mounted thereon, a pull-wheel journaled on the former shaft, and provided with a laterally-extending arm recessed as shown, a detachable drum rigidly secured to said pull-wheel, a gear-wheel journaled on the latter shaft and provided with an eccentric-hub having its upper portion in the form of a regular polygon, a detachable cam adapted to slip over said polygon and to be held thereon, and to engage in said recess in the arm of the pull-wheel, with means for driving said pull-wheel, substantially as described.

3. In a pumping-rigging for oil-wells, the combination with a bed-plate and a vertical pull-wheel shaft or pedestal, and a vertical eccentric-shaft mounted thereon, a pull-wheel journaled on the former shaft, and provided with a laterally-extending arm recessed as shown with detachable wear-plates on either side of said recess, a gear-wheel journaled on the latter shaft and provided with an eccentric-hub, an adjustable eccentric-cam mounted on said hub and engaging in said recess in the arm of the pull-wheel, and means for driving said gear-wheel, substantially as described.

4. In a pumping-rigging for oil-wells, the combination with a bed-plate and a vertical pull-wheel shaft or pedestal and a vertical eccentric-shaft mounted thereon, a pull-wheel journaled on the former shaft, and provided with a laterally-extending arm recessed as shown, a gear-wheel journaled on the latter shaft and provided with an eccentric-hub having its upper portion in the form of a regular polygon, a detachable cam having an aperture therethrough adapted to slip over said polygon, the said aperture being eccentric to the axis of the cam, with means for driving said pull-wheel, substantially as described.

5. In a pumping-rigging for oil-wells, the combination with a pull-wheel, having an extension with a recess therein, of the adjustable means for vibrating said pull-wheel, comprising a gear-wheel and means for rotating the same, an eccentric-hub in the form of a regular polygon fast to said gear-wheel, and a cam provided with an eccentric-recess adapted to fit over said polygon, substantially as described.

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

WILLIAM WRIGHT.

Witnesses:
BRYAN H. OSBORNE,
FRANCES L. KING.