

(No Model.)

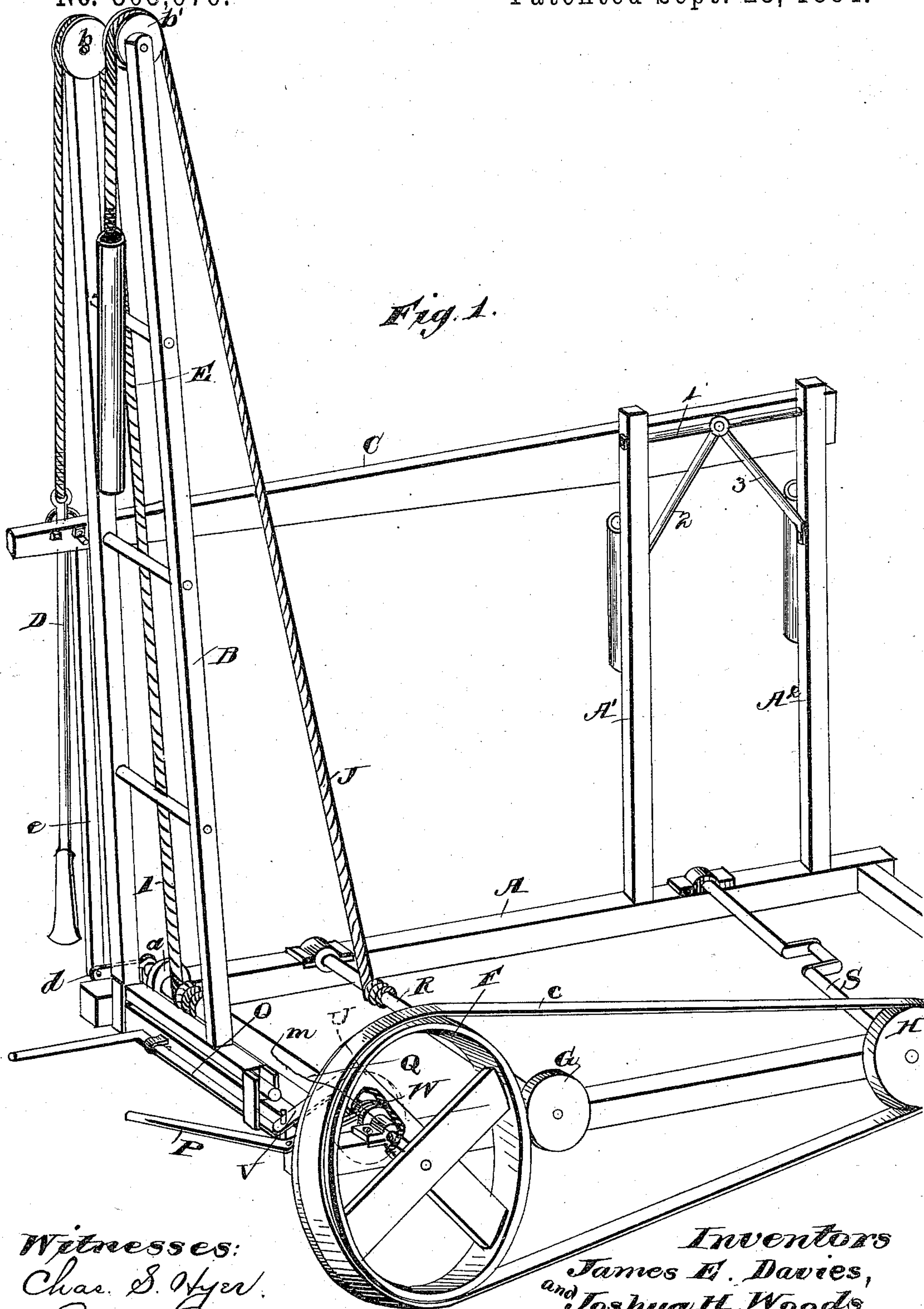
2 Sheets—Sheet 1.

J. E. DAVIES & J. H. WOODS.

ROCK DRILLING MACHINERY FOR OIL WELLS, &c.

No. 305,676.

Patented Sept. 23, 1884.



Witnesses:

Char. S. Hyer.

J. A. Rutherford

Inventors

James E. Davies,
and Joshua H. Woods.

By

James L. Norris.

Atty

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Fig. 2.

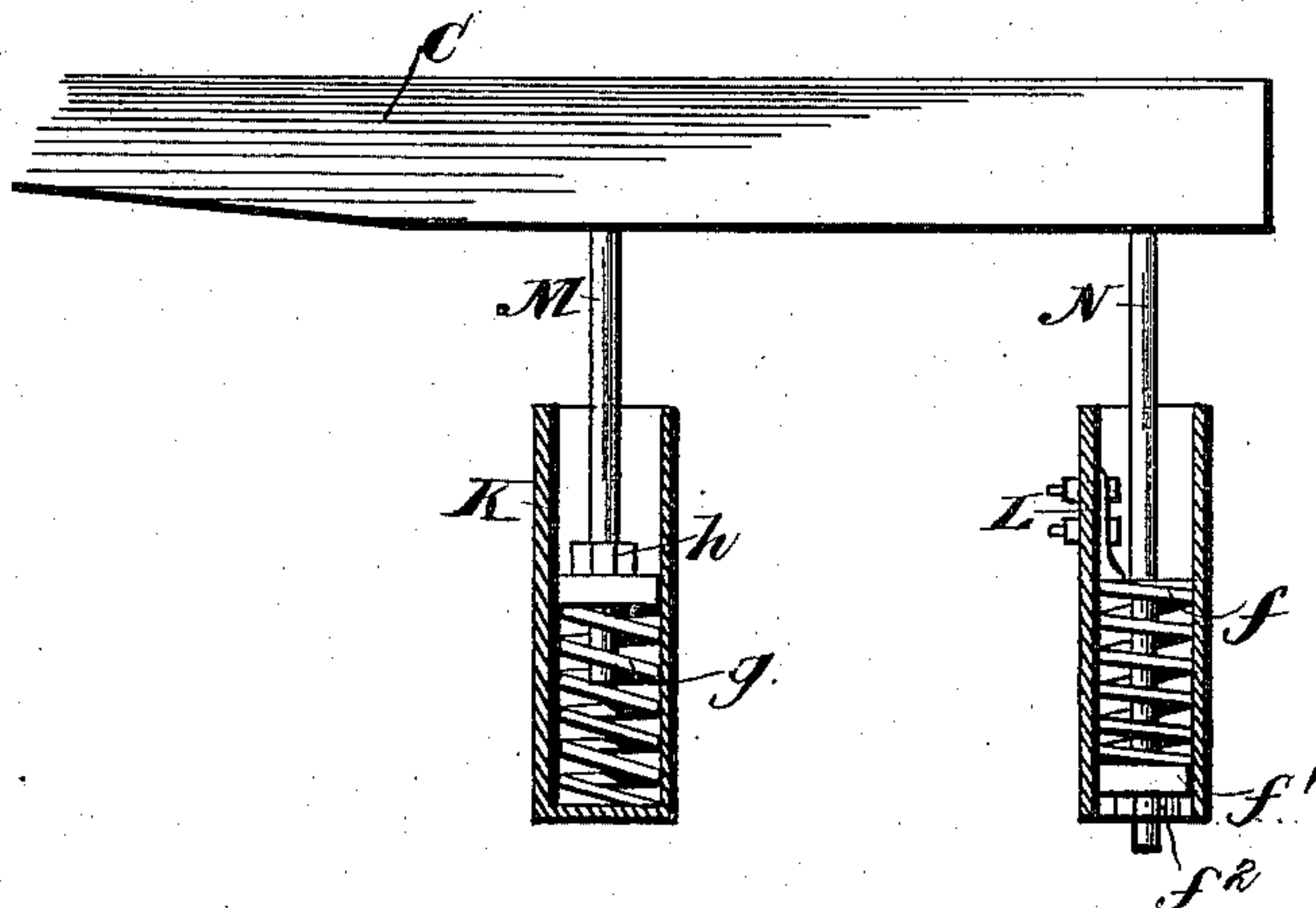


Fig. 3.

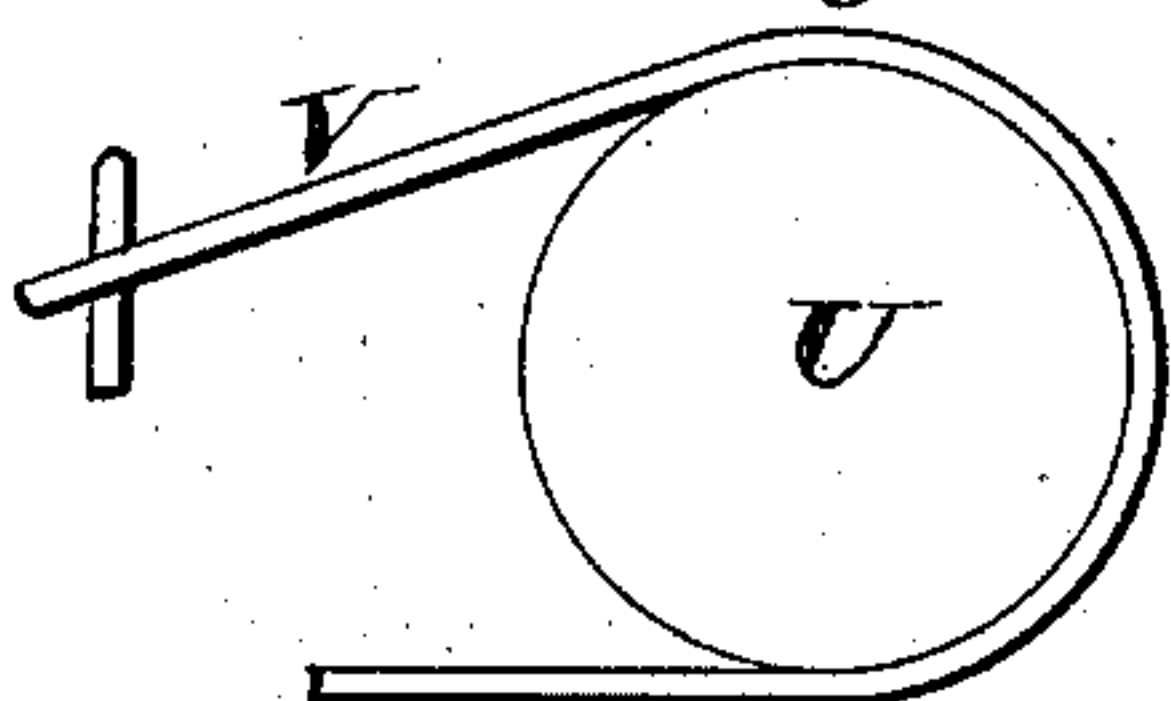
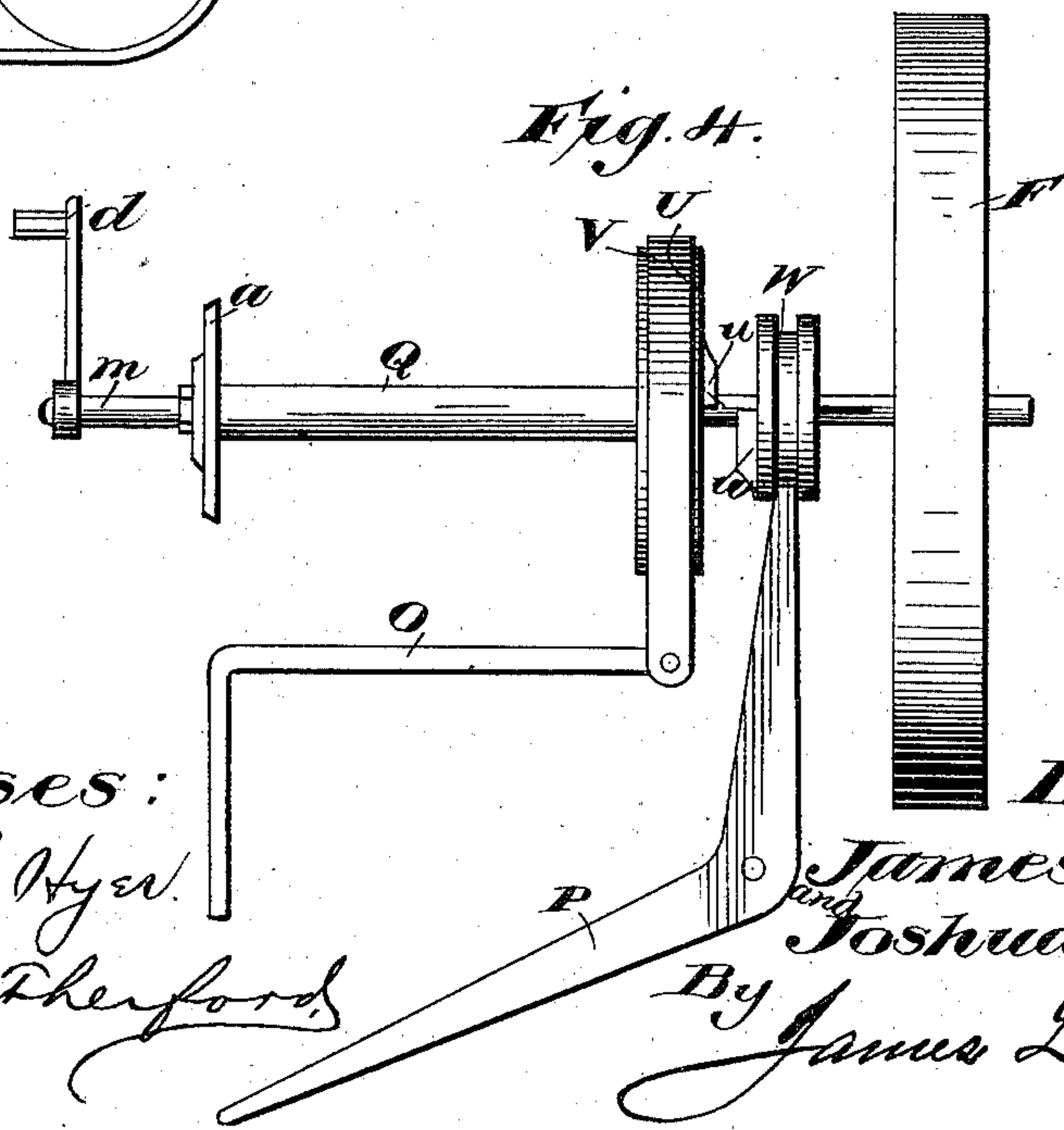


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES E. DAVIES, OF PALMYRA, AND JOSHUA H. WOODS, OF ALLIANCE, OHIO; SAID WOODS ASSIGNOR TO SAID DAVIES, AND SAID DAVIES ASSIGNOR OF ONE-HALF TO THOMAS C. SNYDER, OF CANTON, OHIO.

ROCK-DRILLING MACHINERY FOR OIL-WELLS, &c.

SPECIFICATION forming part of Letters Patent No. 305,676, dated September 23, 1884.

Application filed January 13, 1883. (No model.)

To all whom it may concern:

Be it known that we, JAMES E. DAVIES and JOSHUA H. WOODS, the former a citizen of the United States, residing at Palmyra, county of Portage, and State of Ohio, and the latter a citizen of the United States, residing at Alliance, county of Stark, and State of Ohio, have invented certain new and useful Improvements in Rock-Drilling Machinery for Oil-
10 Wells, &c., of which the following is a specification.

Our invention has for its object, first, to simplify the construction of parts by means of which the drill is elevated from the shaft being drilled; secondly, to cushion the walking-beam through which the drill is operated, so as to steady and prevent the same from jerking; and, thirdly, to combine the parts so that one side of the derrick will serve as a guide
15 for the walking-beam; and to those ends it consists in the construction and the combination of parts hereinafter particularly described.

Figure 1 is a perspective of the frame having my improvements applied thereto, parts
25 being broken away. Fig. 2 is a side view of the rear portion of the walking-beam, showing its connection with the cushioning devices, which are partly in section. Fig. 3 is a side view of the brake and clutch pulley, showing
30 the application of the brake thereto. Fig. 4 is a rear elevation of parts, hereinafter particularly described, detached from other parts.

In the drawings, the letter A designates a rectangular frame, to one end of which is suitable journaled the derrick B, and to one side
35 of which near the other end are secured the upright posts A' A². To the end of the frame adjacent to the derrick there is journaled a shaft, *m*, to one end of which is attached the
40 wheel F, and to the other end the crank *d*, which is connected by a pitman, *e*, to one end of the walking-beam C, which is journaled or pivoted at or near its other end in the diagonal and transverse rods 1, 2, and 3, which are
45 connected to the posts A' A², and brace the same. A sleeve, Q, provided with a collar, *a*, at one end to prevent the rope from slipping off the shaft, and a brake-pulley, U, at the other end, fits loosely around the shaft *m*, and

is designed to receive the rope I, which passes 50 over a pulley, *b*, at the upper end of the derrick, and has the drill D connected to its other end. The sleeve Q is made fast, so as to turn with the shaft *m*, when desired, by means of a clutch, W, keyed to the shaft so as to slide 55 longitudinally thereon and turn therewith. The clutch is operated by means of a lever, P, pivoted to the frame A, and having one end fitting into a groove in the periphery of said clutch. The pulley U has a lug, *u*, on its side, 60 which makes a clutch-pulley of it, so that when the clutch W is moved up so as to bring the lug *w* thereon against the lug *u* on the clutch-pulley the sleeve will turn with the shaft and wind or unwind the rope I, according to the 65 direction in which the shaft may be turned. When the clutch is thrown out from the clutch pulley, the sleeve will remain stationary, to which state it may be brought and held by a brake, V, of the form shown, operated by 70 a crank-lever, O, having suitable bearings in the frame A. A shaft, R, journaled in the side pieces of the frame, and provided with a wheel, G, at one end, which has contact with wheel F so as to be revolved thereby, has connected 75 to it one end of a rope, J, which passes over a pulley, *b'*, at the upper end of the derrick, and has attached to its other end the bucket E, of the ordinary construction, and which is to remove the water and rock-drillings from 80 the shaft being drilled. The wheel F is revolved by means of a belt, *c*, passing over the drive-wheel H on the end of the crank-shaft S, journaled in frame A, and operated by means of a pitman connecting the crank of the shaft 85 with an engine, neither the pitman nor engine being shown.

The drill D is operated at any desired depth to which it may be adjusted by rope I by means of the walking-beam C, oscillated through pit- 90 man *e*, the drill being secured to the beam by means of a suitable device—for instance, by a staple, T—so that as the beam rises and falls the drill will be raised and lowered with it.

In order that the beam may work steadily 95 without any jerking or jarring, we cushion it by means of springs *f* and *g*, preferably coiled, fitted within two boxes, K and L, secured to

the posts A' and A^2 by bolts or other means, and rods M and N , connected to the beam and acting on the springs in said boxes. The rod M has a washer, h , at its lower end, which
 5 rests on the top of spring g , and may be forced down into the same with more or less force to increase or decrease the tension of the spring by a nut, h' . The rod N passes down to the lower end of the spring f , and at that end is
 10 provided with a washer, f' , which is made to bear against the lower face of the spring with more or less force by means of a nut, f^2 , so as to regulate the tension of the spring. A bracket, i , is bolted to the inside of the upper
 15 portion of box L , so as to be adjustable and to bear against the top of the spring. By such construction, when the rear end of the beam is depressed, the spring f is compressed and the spring g expanded, so that the movement
 20 of the beam is cushioned and steadied, and when the same end is elevated the spring g is compressed and spring f expands, so that the movement in that direction is cushioned, and thus all jerking and jarring of the parts is
 25 prevented. One side of the derrick B is made straight, and the beam bears against the same so as to be guided thereby, whereby it is prevented from wobbling sidewise.

The construction is strong, simple, and efficient for the purpose designed.

Having thus described our invention, what we claim is—

1. The combination of the walking-beam, the drill connected therewith, the shaft having the power-wheel at one end and crank at the other end, and the pitman connecting said crank with the beam at the end adjacent to the drill, substantially as described.

2. The combination of the shaft provided with the power-wheel and clutch applied to the machine at the end adjacent to the drill, the sleeve to said shaft, the drill and its rope connected with said sleeve, and the lever for moving the clutch into and out of engagement
 45 with said sleeve, substantially as described.

3. The combination of the shaft provided with the power-wheel and clutch applied to the machine at the end adjacent to the drill, the sleeve to said shaft, provided with the
 50 clutch and brake pulley, the brake to said pulley, the drill and its rope connected with

said sleeve, and the lever for moving the clutch into and out of engagement with the clutch-pulley, substantially as described.

4. The combination of the shaft provided with the power-wheel and clutch applied to the machine at the end adjacent to the drill, the sleeve to said shaft, the drill connected with said sleeve by the rope, the shaft provided with the wheel in contact with the power-wheel, the bucket connected with said shaft by the rope, and the lever for moving the clutch into and out of engagement with said sleeve, substantially as described.

5. The combination of the beam, the power-shaft connected therewith by a pitman at the end of the machine adjacent to the drill, the drill connected with the beam, and the sleeve to the power-shaft, connected with the drill and capable of revolving or not revolving with the shaft, substantially as described.

6. The combination, with the walking-beam, of a spring-cushion consisting of two springs, one of which is expanded when the other is compressed, for steadying and preventing the beam from jerking, substantially as described.

7. The combination, with the beam, of the springs, the rods connecting the same and the beam, boxes for the springs, and supports for the boxes, substantially as described.

8. The combination, with the walking-beam, of a spring-cushion consisting of two springs, the tension of which is adjustable, one of which is expanded when the other is compressed, for steadying and preventing the beam from jerking, substantially as described.

9. The combination of the beam, the boxes, the springs within the boxes, the rods connecting the beam and springs, and the nuts for regulating the tension of the springs, substantially as described.

10. The combination, with the walking-beam, of the derrick having one side at one end of the machine adjacent to the drill formed to act as a guide to the beam in its movement, substantially as described.

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Witnesses:

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