No. 660,968. Patented Oct. 30, 1900.

O. E. OAKES.

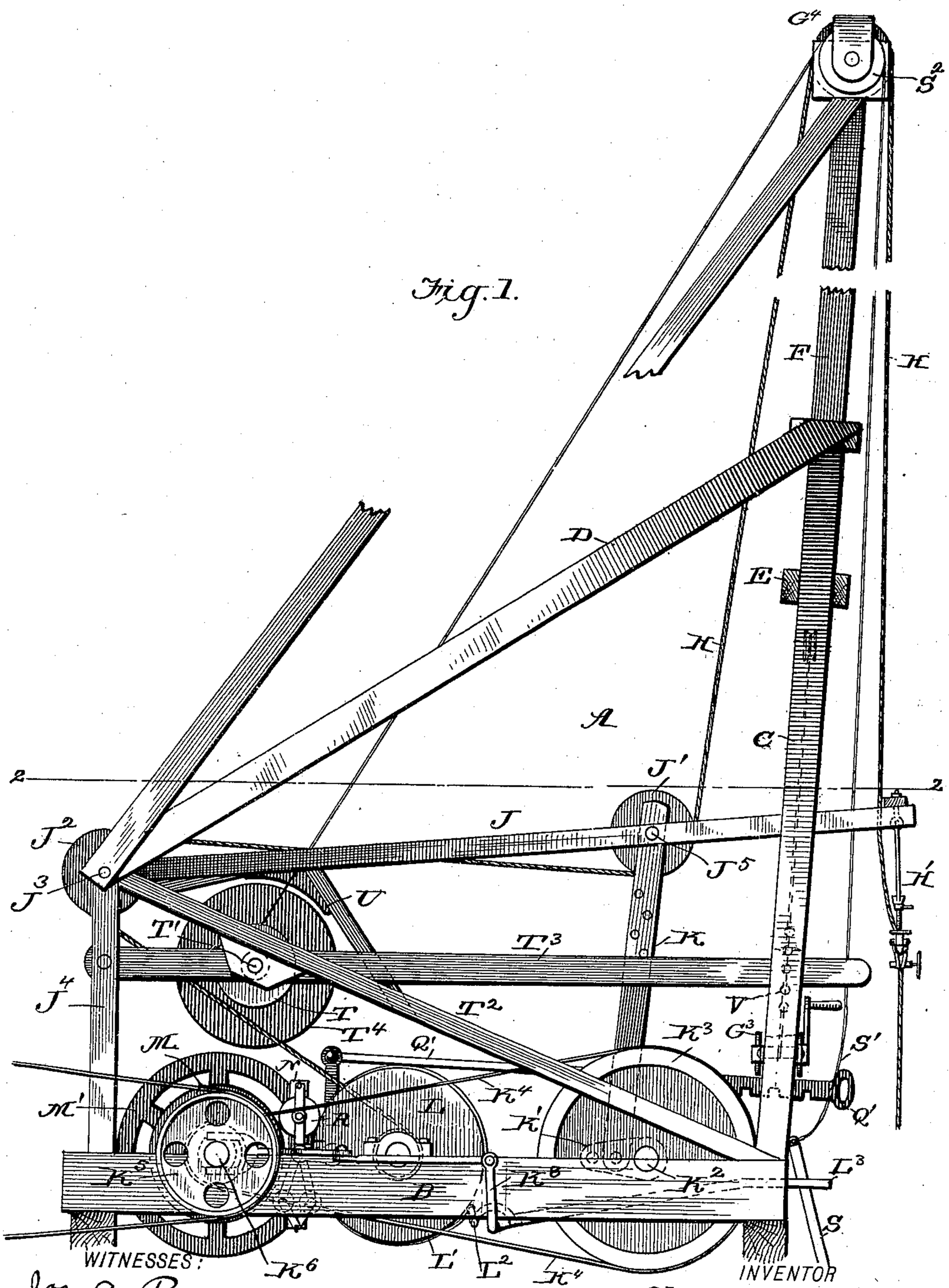
DRILLING MACHINE.

(Application filed Dec. 28, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

Jos. A. Ryan

F. S. Stitt

INVENTOR

Oliver E. Oakes.

BY Munn & Co.

ATTORNEYS

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Fig. 2.

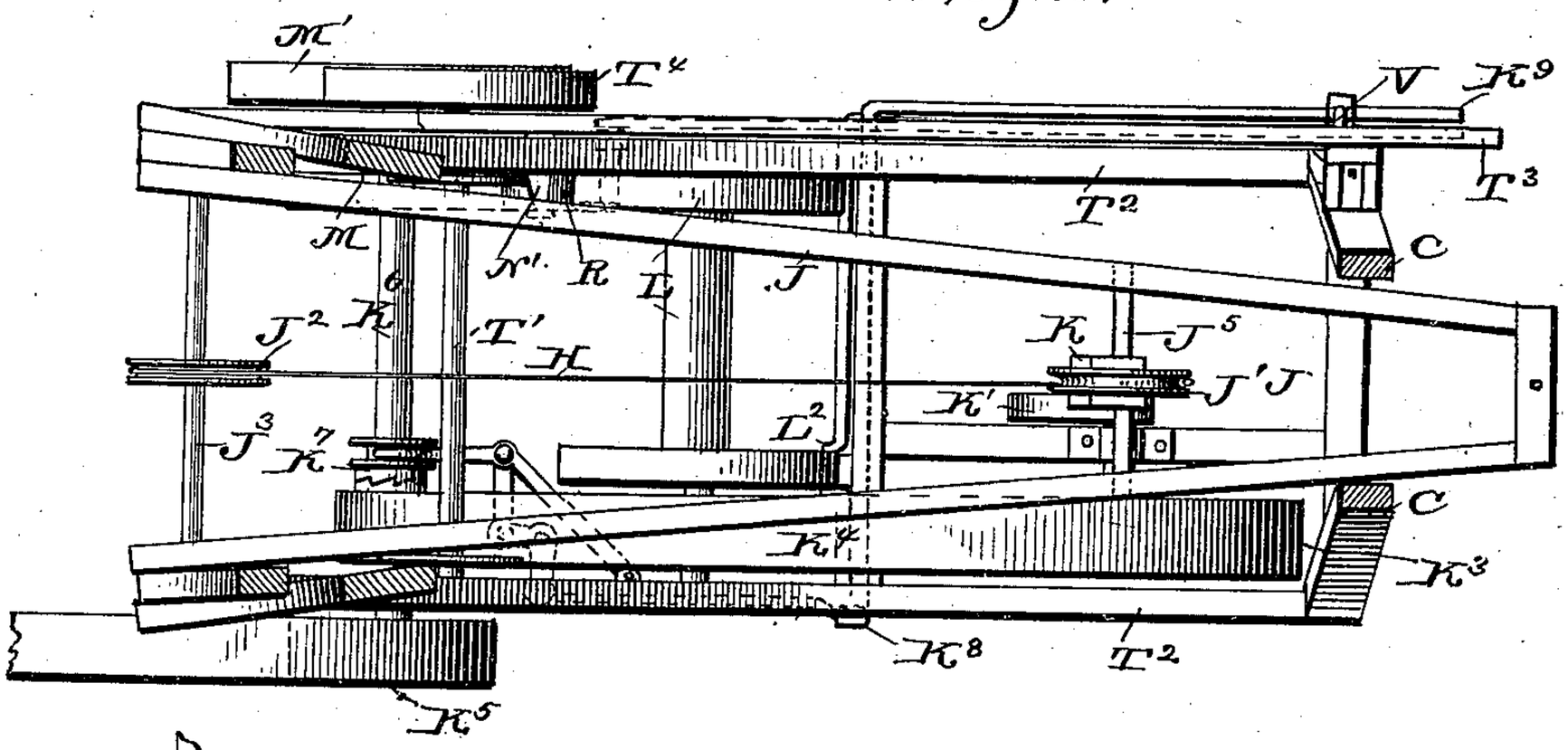
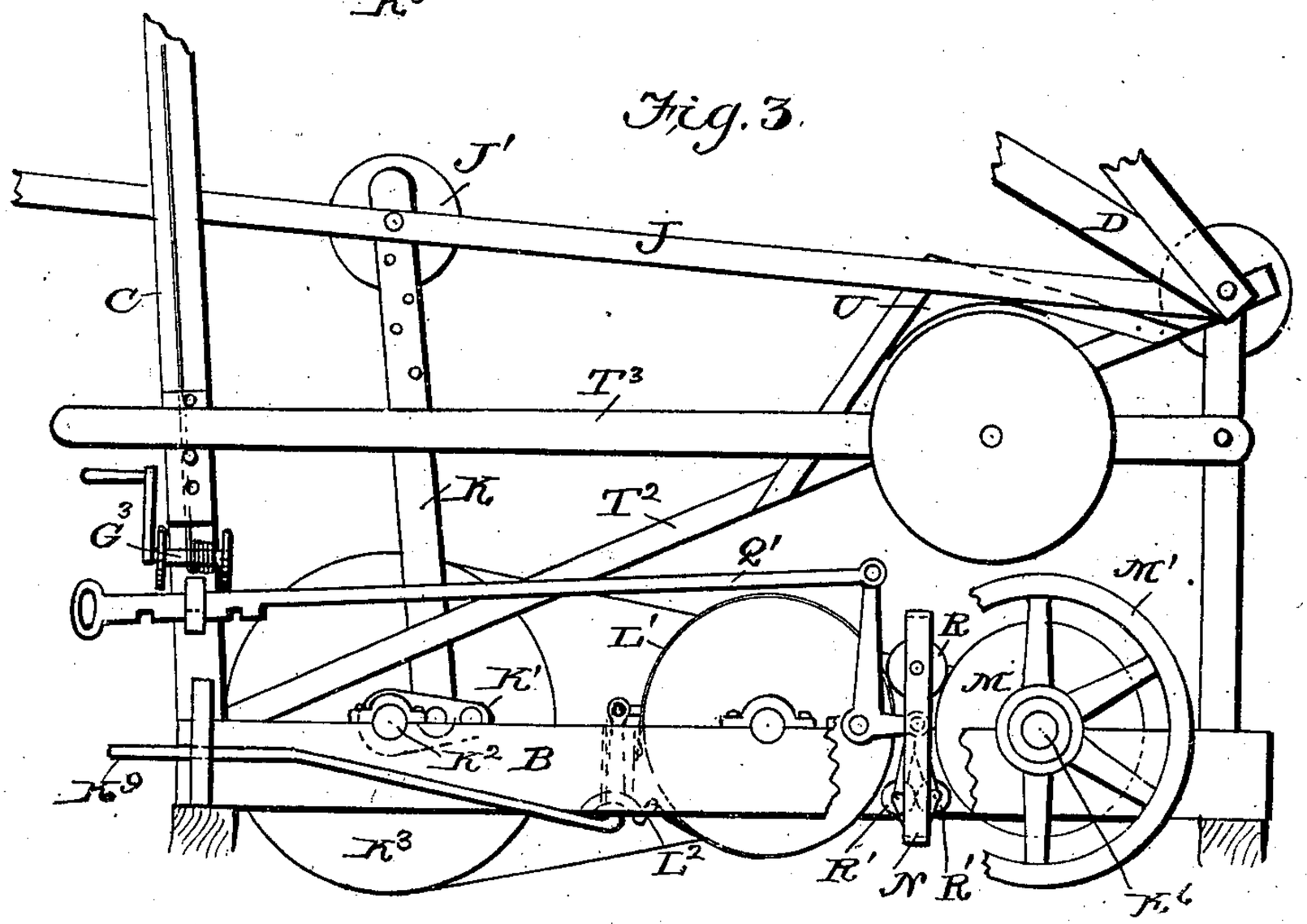


Fig. 3.



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3 Sheets—Sheet 3.

Fig. 4.

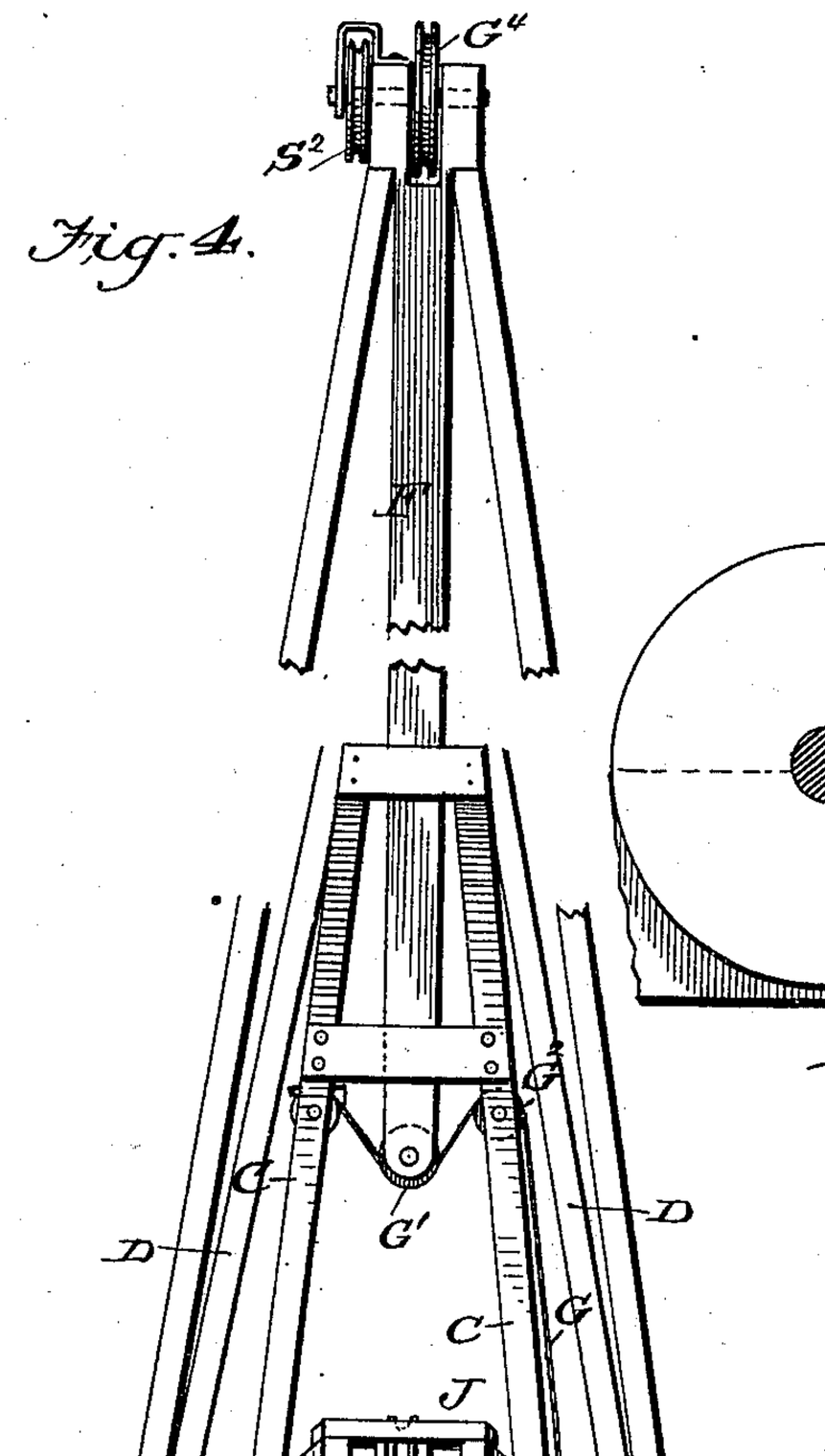


Fig. 5.

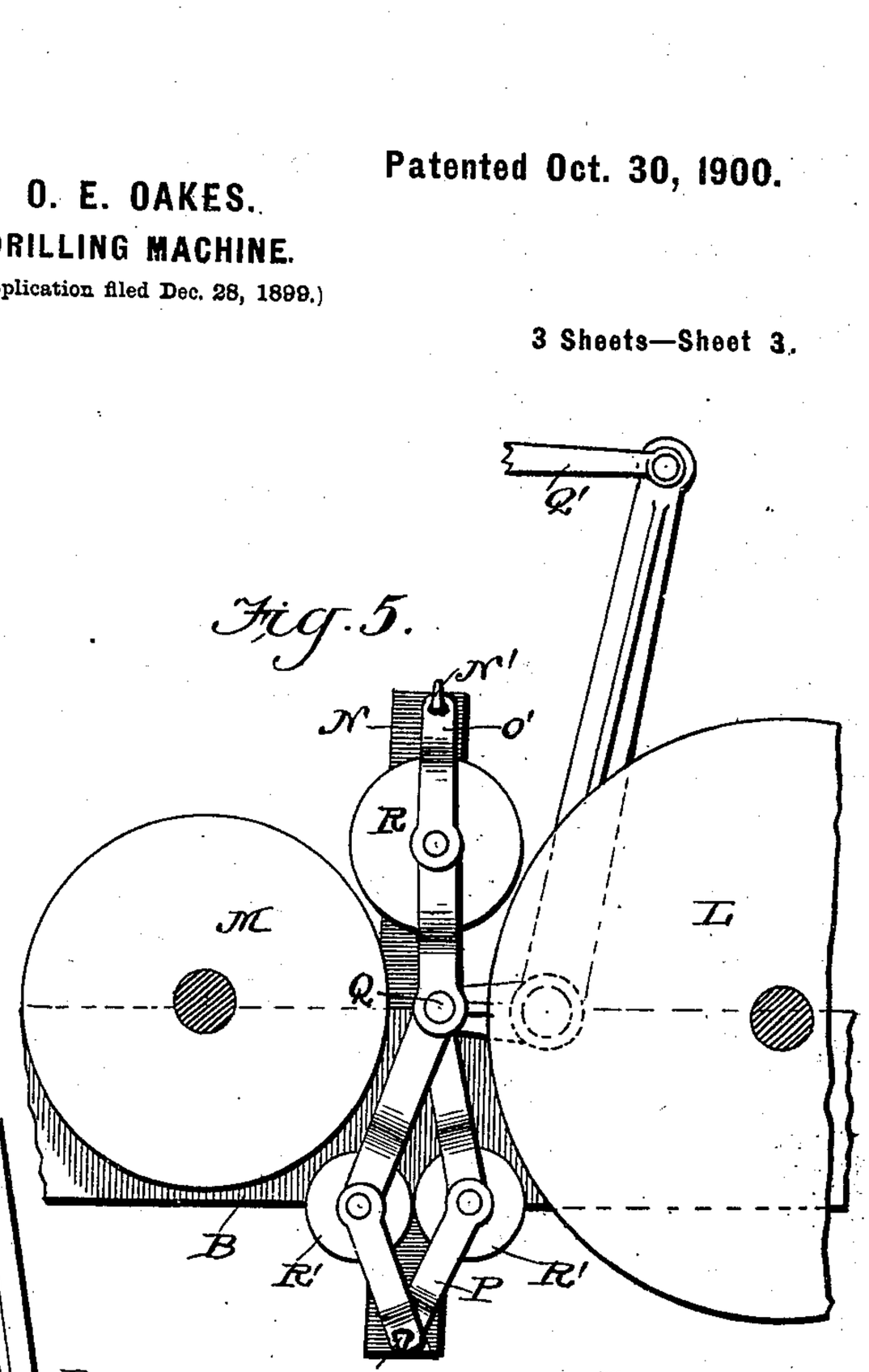
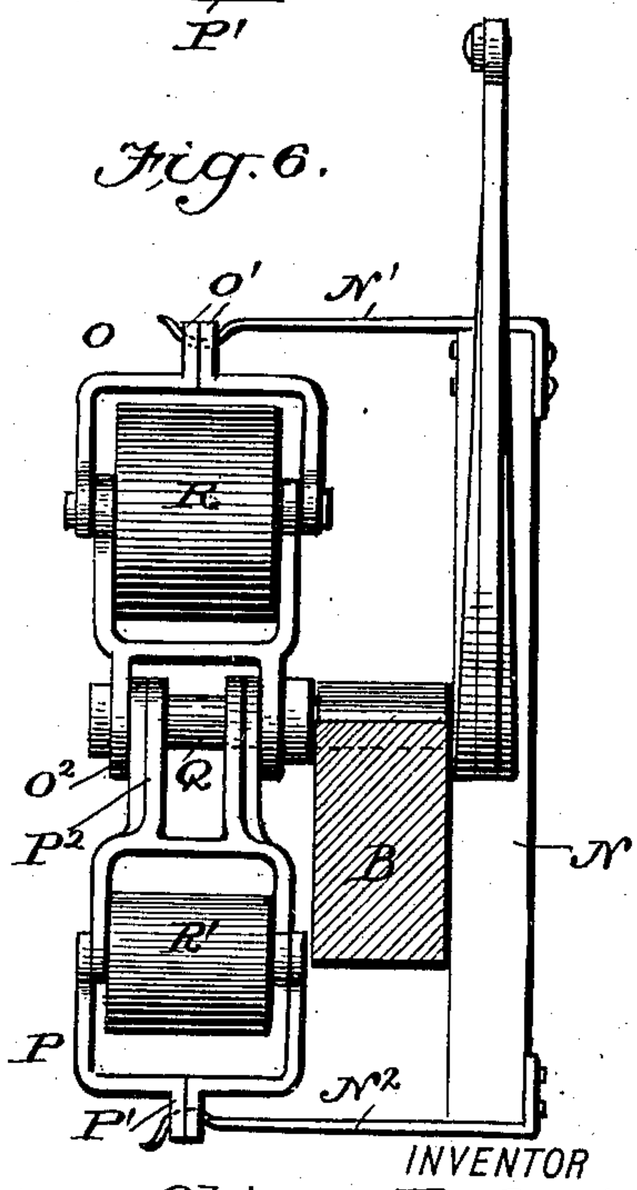


Fig. 6.



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F. S. Stitt

INVENTOR

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ATTORNEYS

UNITED STATES PATENT OFFICE.

OLIVER E. OAKES, OF WEBB CITY, MISSOURI.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 660,968, dated October 30, 1900.

Application filed December 28, 1899. Serial No. 741,828. (No model.)

To all whom it may concern:

Be it known that I, OLIVER E. OAKES, of Webb City, in the county of Jasper and State of Missouri, have invented a new and useful Improvement in Drilling-Machines, of which the following is a specification.

My invention relates to drilling-machines, and has for its object certain improvements in such machines whereby they will be rendered very efficient in operation and not liable to get out of order.

The invention consists in certain details of construction and combination of the parts, which I shall hereinafter specifically describe and claim.

Reference is to be had to the accompanying drawings, forming part of this specification, in which like characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of my improved drilling-machine. Fig. 2 is a horizontal section thereof on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of the machine on the side opposite to that shown in Fig. 1, the upper part of the derrick being broken away. Fig. 4 is an end view of the complete machine. Fig. 5 is a detail side view illustrating the friction-gear for operating the bull-wheel, and Fig. 6 is a detail end view of the friction devices.

The derrick A is mounted on suitable sills B and consists of posts C, braced by beams D and cross-bars E, through which latter the mast F is fitted to slide and is held adjusted to predetermined heights by a cable G, secured in one of the posts C and passing under a pulley G′ in the lower end of the mast, over a similar pulley G^2 in the opposite post, and adapted to be wound upon a windlass G^3, as best seen in Fig. 4.

A pulley G^4 is journaled in the upper end of the mast F, and over this pulley the drilling-cable H is designed to pass, said cable passing downwardly underneath a pulley J′, journaled on a transverse shaft J^5, secured in the free end of the walking-beam J, and thence rearwardly around a second pulley J^2, journaled on the transverse shaft J^3. The walking-beam J is pivoted on the said transverse shaft J^3, as shown, the shaft being mounted in uprights J^4, supported by the sill B. To reciprocate the walking-beam J, I provide a pitman K, attached at one end to the shaft J^5 and connected at its other end to a crank K′ on a shaft K^2, on which is secured a band-wheel K^3. The latter is connected by a band K^4 with the main driving-wheel K^5, and the said wheel is mounted loosely on one end of the driving-shaft K^6. To throw the driving-shaft into gear, I provide the clutch K^7, which is operated by a crank-shaft K^8 and handle-rod K^9 on the other side of the machine.

One end of the drilling-cable H after being passed around the pulley J^2 is secured upon the bull-wheel L, which is normally kept from rotating by a brake-band L′, secured at one end in a sill, passed around one side of the bull-wheel, and at its other end is secured in the arch of a transverse crank-shaft L^2, operated by a handle-rod L^3.

In the ordinary operation of "spudding" the proper movement is given the tools by the reciprocation of the walking-beam and movement of pulley J′ thereon. After the spudding process is finished the walking-beam J is again reciprocated by the mechanism described and raises the drilling-tool by means of the temper-screw H′, attached to its free end and grappling the drilling-cable. After the operation is finished, or if anything should happen to the tools which would require the raising of the same out of the well, the bull-wheel is operated to wind up the drilling-cable. For this purpose I provide the following mechanism:

Secured to one side of one sill B, between the periphery of one side of the bull-wheel L and the adjacent periphery of a wheel M on the main driving-shaft, is an upright bearing-post N, having laterally-extending spring-arms N′ and N^2 at its upper and lower ends, respectively, as shown in Figs. 5 and 6, and a jointed bracket O is hung by ears O′ from the upper spring-arm N′. Jointed brackets P, two in number, are secured at one end by ears P′ to the lower spring-arms N^2, and all three of said brackets are pivotally connected by ears O^2 and P^2 on the crank-shaft Q, mounted on the sill B and operated by a handle-rod Q′.

A friction-roller R is journaled in the bracket O just out of contact with the peripheries of the wheel M and bull-wheel and on

one side of the horizontal diameter thereof, and similar though smaller friction-rollers R′ are mounted in the brackets P on the other side of such diameter, as shown in Fig. 5, said latter rollers having their peripheries normally in frictional contact. Now it will be seen that when the handle-rod Q′ is pushed the single friction-roller R will be brought into play and the bull-wheel will be rotated to wind up the drilling-cable H and draw the tools out of the well, while a pull on the lever will cause the rollers R′ to come into play and effect an opposite movement of the bull-wheel.

In order to operate the sand-pump or bailer S, (see Figs. 1 and 3,) I pass the sand-pump line S′ over a pulley S^2 in the upper end of the mast F and attach it to the sand-pump reel T, which latter is mounted on a shaft T′, journaled at one end in the diagonal brace T^2 of the derrick-frame and at its other end journaled in a vertically-swinging lever T^3. By moving said lever downward a friction-wheel T^4 on the sand-reel shaft comes in frictional engagement with fly-wheel M′, whereby to draw up the bailer S, while an upward movement of the lever throws the said wheel T^4 in engagement with a wear-plate on the brake U and stops the rotation of the sand-reel. The lever T^3 is held in different positions by pins V, which are adapted to be inserted in a block W, as shown in Figs. 1 and 4.

It will be seen that I use no toothed wheels in my drilling-machine, so that the danger of grinding off teeth of operating-wheels by the sudden stopping of the machine is avoided.

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

1. In a machine of the character described, the combination with a driven shaft carrying a friction-wheel, and a bull-wheel, of spring-supported friction-rollers interposed between the peripheries of the friction-wheel and bull-wheel, and means for throwing said rollers into engagement with said wheels, as set forth.

2. In a drilling-machine, a framework, a driven shaft in said framework and carrying a friction-wheel, a bull-wheel in said framework, a bearing-post secured on the framework between the bull-wheel and friction-wheel, spring-supported friction-rollers connected with said post, and means for actuating said rollers whereby to drive the bull-wheel from the friction-wheel, as set forth.

3. In a drilling-machine, a framework, a bull-wheel in said framework, a driven shaft carrying a friction-wheel, a bearing-post on said framework, laterally-extending spring-arms secured to said post, brackets mounted on said arms, friction-rollers in said brackets, and means for throwing said rollers into frictional engagement with said bull-wheel and friction-wheel, as set forth.

4. In a drilling-machine, a framework, a driven shaft in said framework carrying a friction-wheel, a bull-wheel in said framework, a bearing-post secured on the framework between the bull-wheel and friction-wheel, laterally-extending spring-arms secured to the upper and lower ends of said post, a jointed bracket formed with ears by which it is hung from the upper spring-arm, a pair of jointed brackets having ears secured to the lower spring-arm, a friction-roller in each of said brackets and a crank-shaft mounted on the framework and secured to all of said brackets, as and for the purpose set forth.

5. In a drilling-machine, a bull-wheel, a driven shaft carrying a friction-wheel, a spring-held friction-roller between the peripheries of the bull-wheel and friction-wheel on one side of their horizontal diameters, a pair of spring-held friction-rollers on the other side of said diameters, and means for alternately throwing the single roller and the pair of rollers into gear, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OLIVER E. OAKES.

Witnesses:
A. J. McFALL,
FRANK E. SMITH.