

2 Sheets—Sheet 1.

No. 560,120.

Patented May 12, 1896.

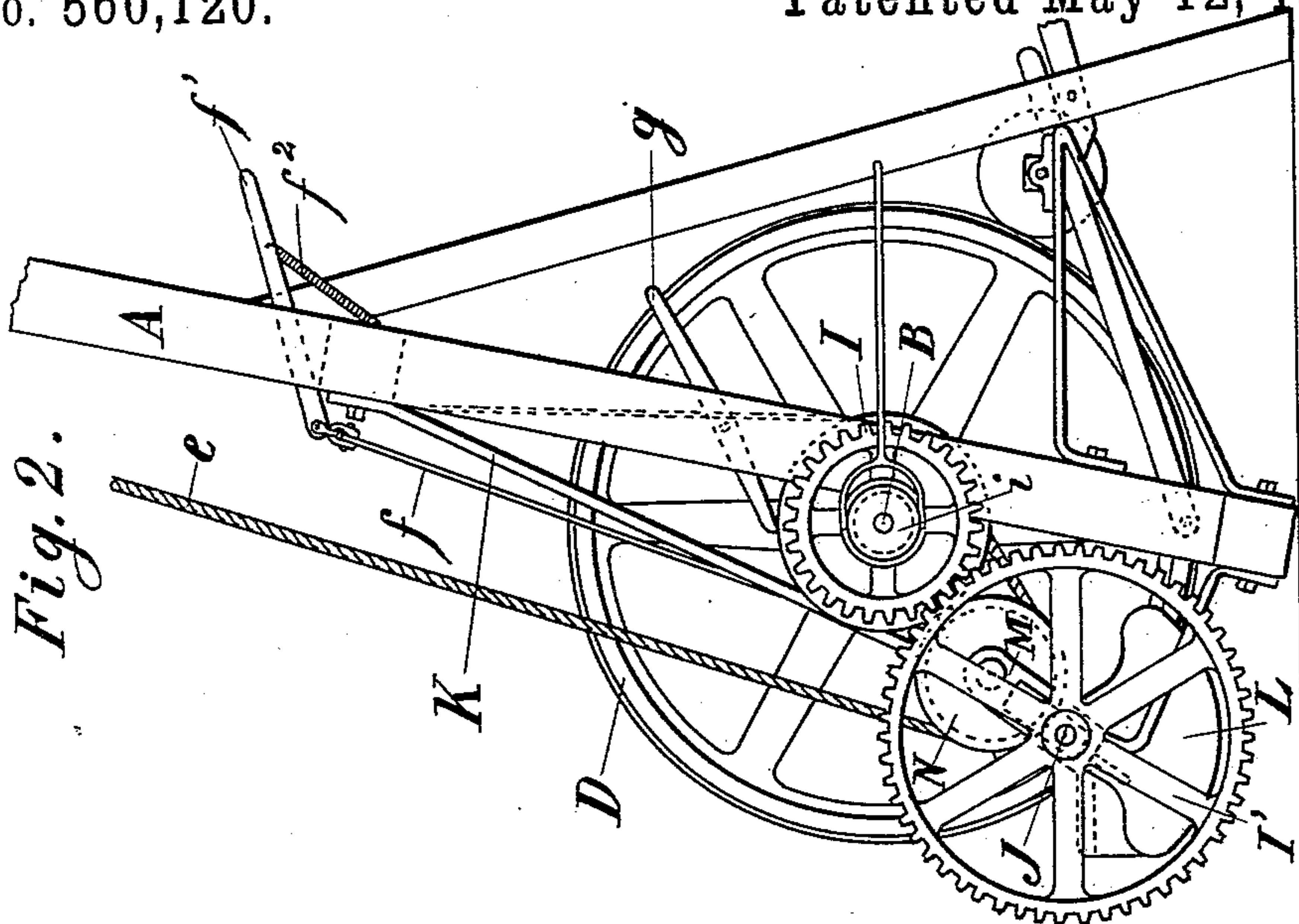


Fig. 2.

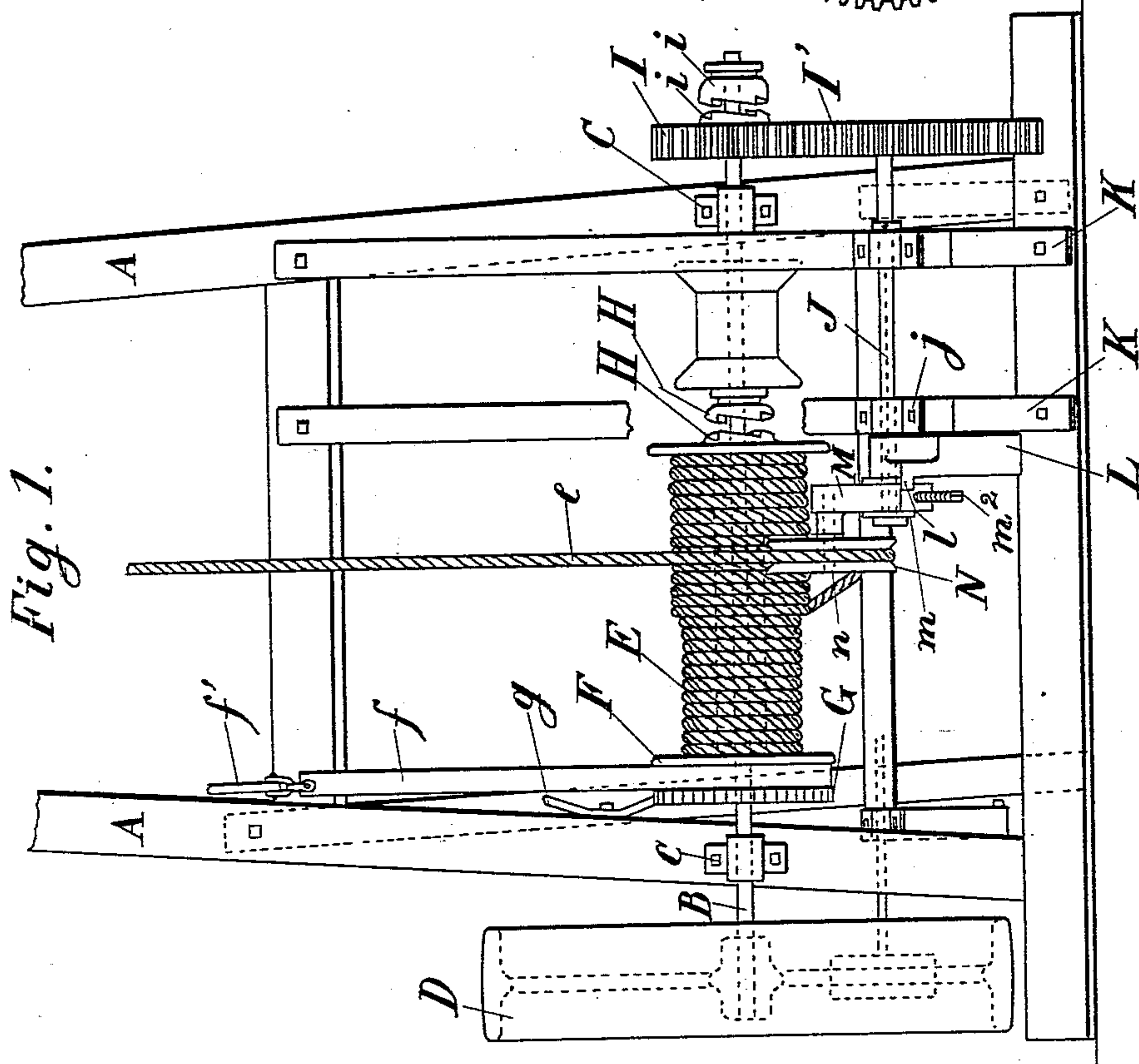


Fig. 1.

Witnesses:..
M. J. Eichhorn.
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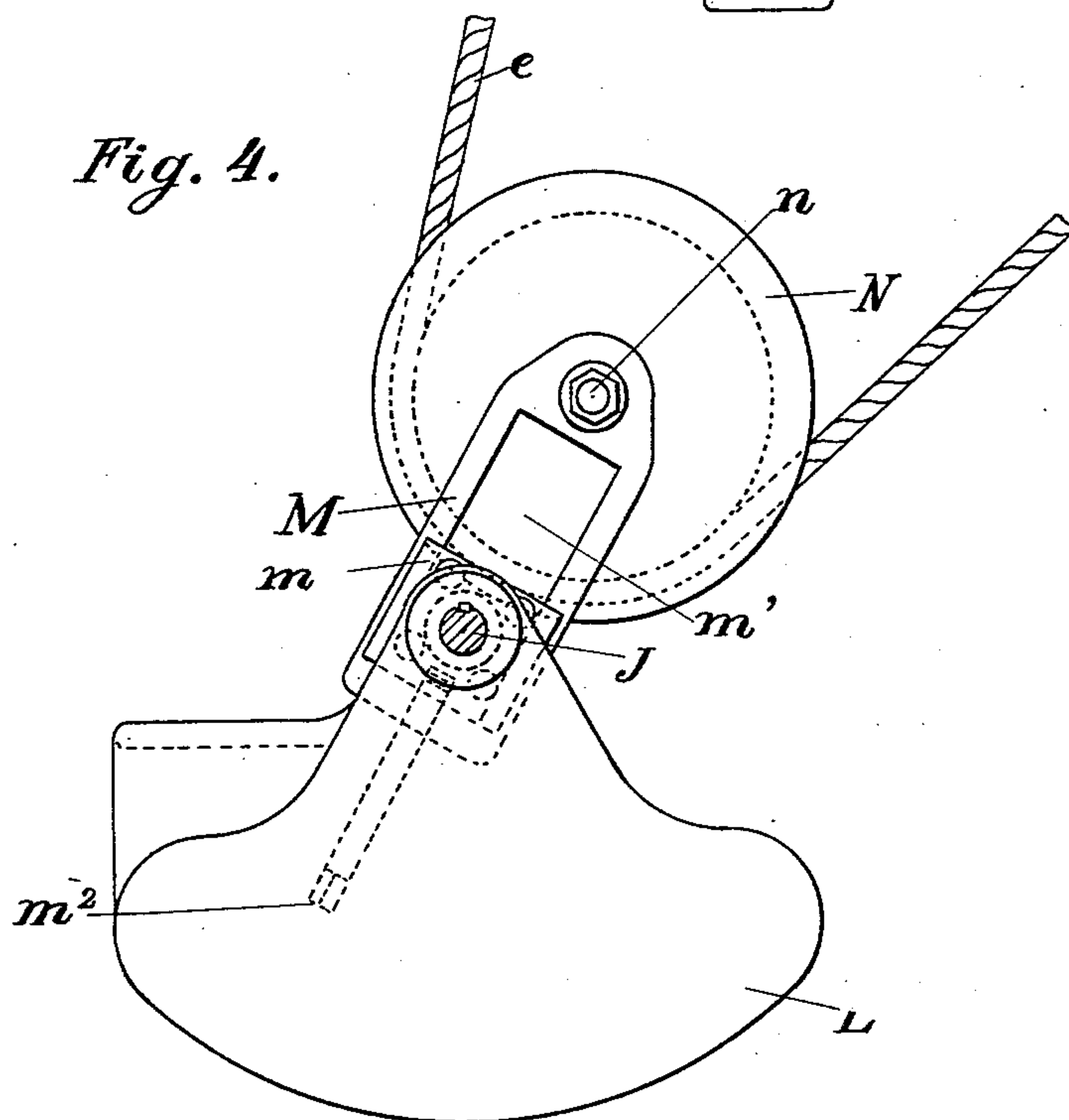
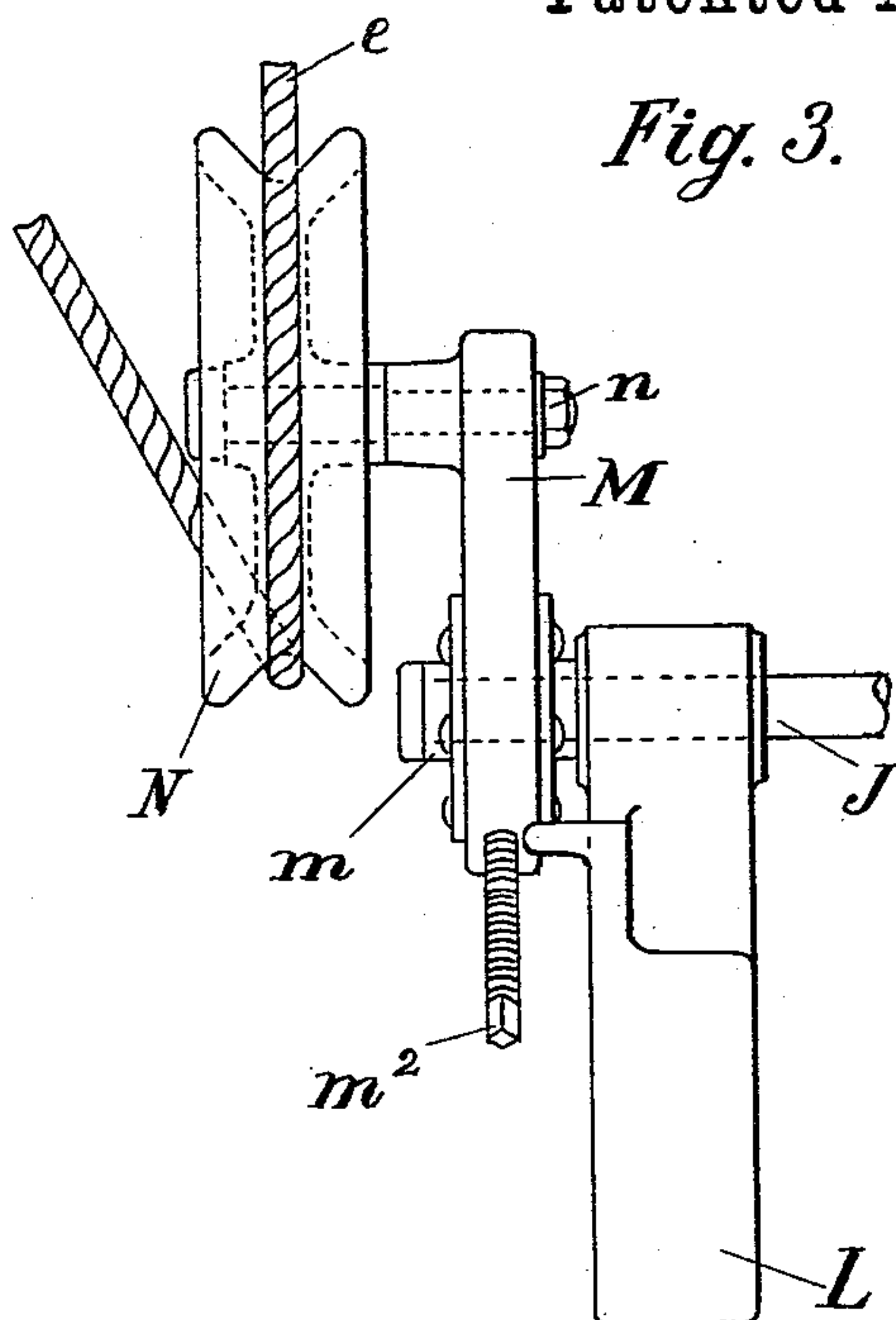
(No Model.)

2 Sheets—Sheet 2.

M. G. BUNNELL.
WELL MAKING MACHINE.

No. 560,120.

Patented May 12, 1896.



Witnesses:
M. J. Eichhorn.
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Inventor
M. G. Bunnell

UNITED STATES PATENT OFFICE.

MORTON G. BUNNELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO FREDERICK C. AUSTIN, OF SAME PLACE.

WELL-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 560,120, dated May 12, 1896.

Application filed March 17, 1896. Serial No. 583,586. (No model.)

To all whom it may concern:

Be it known that I, MORTON G. BUNNELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Well-Making Machines, of which the following is a specification.

My invention relates to improvements in that class of well-making machines which are designed to give an up-and-down or churning motion to the drilling-tools; and the objects of my invention are to provide simple and efficient means for giving the drilling motion, for varying the length of the drop of the drill, as required, and other features of improvement more particularly described in this specification. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the machine embracing my invention. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged detail of part of Fig. 1, showing in front view the drilling-sheave, the crank-arm, and the actuating-counterweight. Fig. 4 is an enlarged detail of part of Fig. 2, showing in side view the drilling-sheave, the crank-arm, and the actuating-counterweight.

Similar letters refer to similar parts throughout the several views.

The frame of the machine may be of any suitable form; but I prefer to utilize the lower part of the two derrick-legs A A as the frame upon which to mount the principal parts of the machine. The derrick may be of any suitable form.

B is the main shaft, working in the journal-boxes C, which are attached to the frame A.

D is a driving-pulley.

E is a spool or drum mounted loosely on the shaft B, upon which the drilling-cable *e* is wound.

F is a brake-wheel on the drum E, and *f* the brake-band, and *f'* the brake-lever for operating the brake.

f'' is a spring for holding the lever *f'* from flying up when released.

G is a ratchet-wheel on the end of the drum E, and *g* the pawl for engaging with the ratchet-wheel.

H is a clutch of any desired form, so arranged

that when its two jaws are brought into engagement the drum E revolves with the shaft B.

I is a gear mounted loosely on the shaft B, which can be made to revolve with the shaft B by the engagement of the two jaws of the clutch *i*.

I' is a gear securely attached to the shaft J and meshing with the gear I.

K are the brackets carrying the journal-boxes *j* of the shaft J.

L is an actuating-counterweight securely mounted on the shaft J, having the projection *l* for engagement with the crank-arm M.

m is a journal-box loosely fitting the shaft J and arranged to slide in the slot *m'* of the crank-arm M.

*m*² is an adjusting-screw swivelly connected with the journal-box *m*, so that the position of the journal-box *m* in the slot *m'* of the crank-arm M is determined by the screw *m*², the position of the journal-box *m* regulating the length of the crank-arm M from the center of the shaft J.

n is a wrist-pin at the end of the crank-arm M. On the wrist-pin *n* is loosely mounted the sheave-pulley N, (herein called the "drilling-sheave.")

The operation of my machine is as follows: The drill-cable *e* having been wound on the drum E, the free end passes around the drilling-sheave N and around the crown-pulley in the top of the derrick and is attached to the drilling-tools in the ordinary manner, so that the drilling-tools hang suspended. Shaft B having been put in motion by any suitable power and the jaws of the clutch *i* having been brought into engagement, the shaft J will revolve, by means of the gears I and I', and with it the actuating-counterweight L, and the projection *l* will come in contact with the crank-arm M and carry it around, and with it the drilling-sheave N, which will depress the drill-cable *e* and raise the drilling-tools; but when the drilling-sheave has reached its lowest point the tools will fall by gravity and the drilling-sheave with the crank-arm fly around until they reach the point of rest and will remain there until the projection *l* of the actuating-counterweight L again carries them around, and the repetition of this gives the

up-and-down or drilling motion to the drill. The counterweight L is so positioned in respect to the projection *l* that the counterweight is ascending at the same time that the drilling-sheave is ascending, and consequently as the tools are dropping the length of the drop of the drilling-tools is regulated by the length of the crank-arm M, which is controlled by the screw *m*².

10 When it is required to raise the drilling-tools, the jaws of the clutch H are brought into engagement. When the tools have reached the point desired, the jaws of the clutch H are released and the pawl *g* made to engage with
15 the ratchet-wheel G. When it is desired to lower the drilling-tools, the pawl *g* is raised and the tools allowed to fall by gravity, the speed of their descent being regulated by brake-band *f*, operated by the lever *f*'.

20 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a well-making machine, the combination of an actuating-counterweight and a crank-arm whose length can be adjusted, said
25 crank-arm carrying a drilling-sheave substantially as set forth.

2. In a well-making machine, the combination of an actuating-counterweight, a crank-

arm with an adjustable box, said crank-arm carrying a drilling-sheave substantially as set forth. 30

3. In a well-making machine, the combination of a revolving shaft, and a rigid actuating-counterweight thereon having a projection, a slotted crank-arm loosely embracing
35 the shaft in the path of the projection of the weight, and a sheave carried by the crank-arm for actuating the drill-cable, substantially as described.

4. In a well-making machine, the combination of a revolving shaft, and a rigid actuating-counterweight thereon having a projection at one side, a journal-box loosely fitting
40 the shaft, a slotted crank-arm in the slot of which the box slides, means for adjusting the relative position of said arm and box, and a sheave for the drill-cable, the same being held
45 by a wrist-pin on the side of the crank-arm, substantially as described.

In witness whereof I hereto set my hand and seal this 12th day of March, A. D. 1896. 50

MORTON G. BUNNELL. [L. S.]

Witnesses:

M. L. PURVIN,
VACLAR JELINEK.