

(No Model.)

2 Sheets—Sheet 1.

E. R. LOCKWOOD.  
DRILLING MACHINE.

No. 504,599.

Patented Sept. 5, 1893.

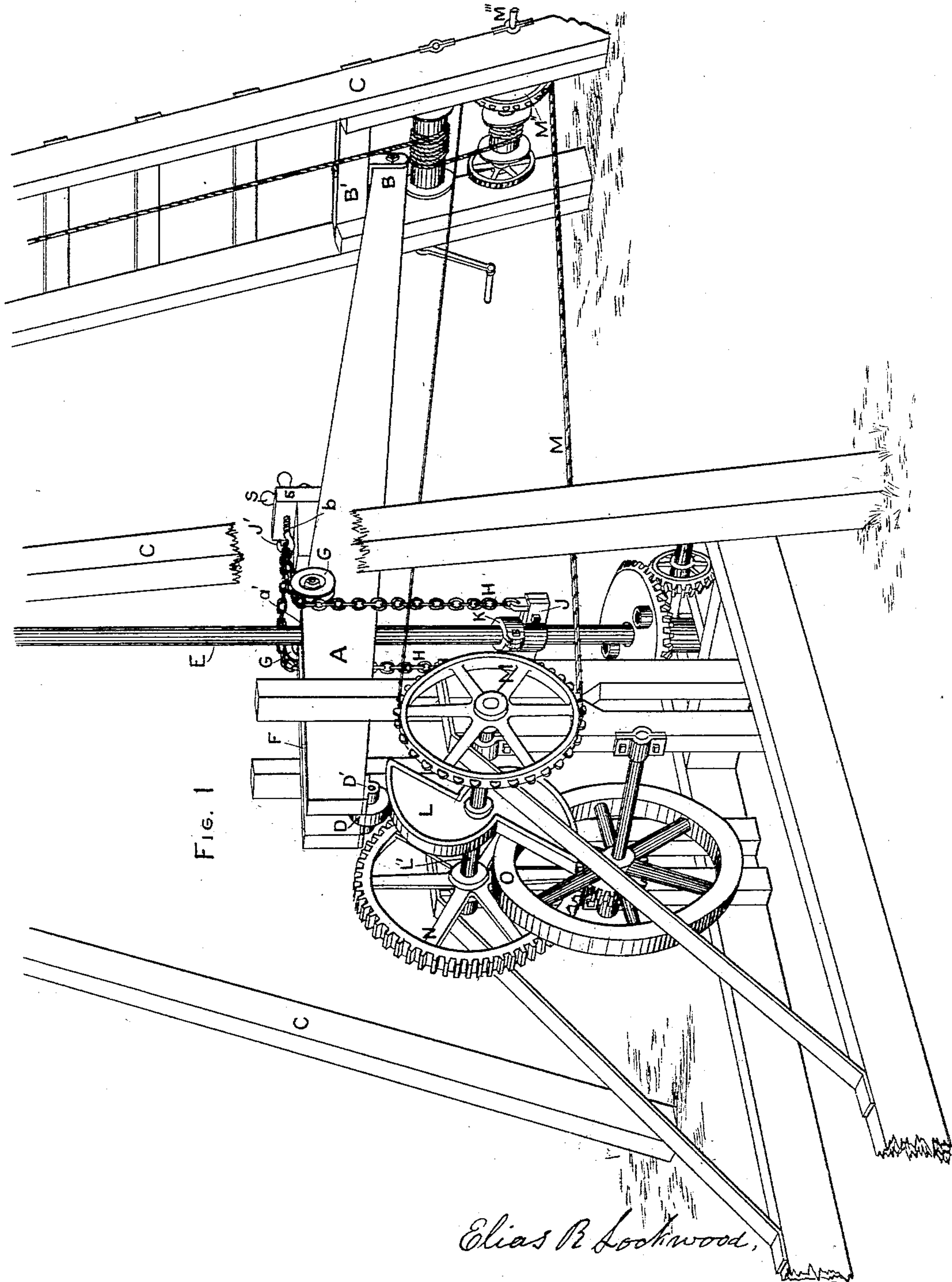


FIG. 1

Elias R. Lockwood,

INVENTOR.

WITNESSES

George K. Frazer  
Edmund H. Hinch-

by O. D. Barrett  
his Attorney

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Fig. 4

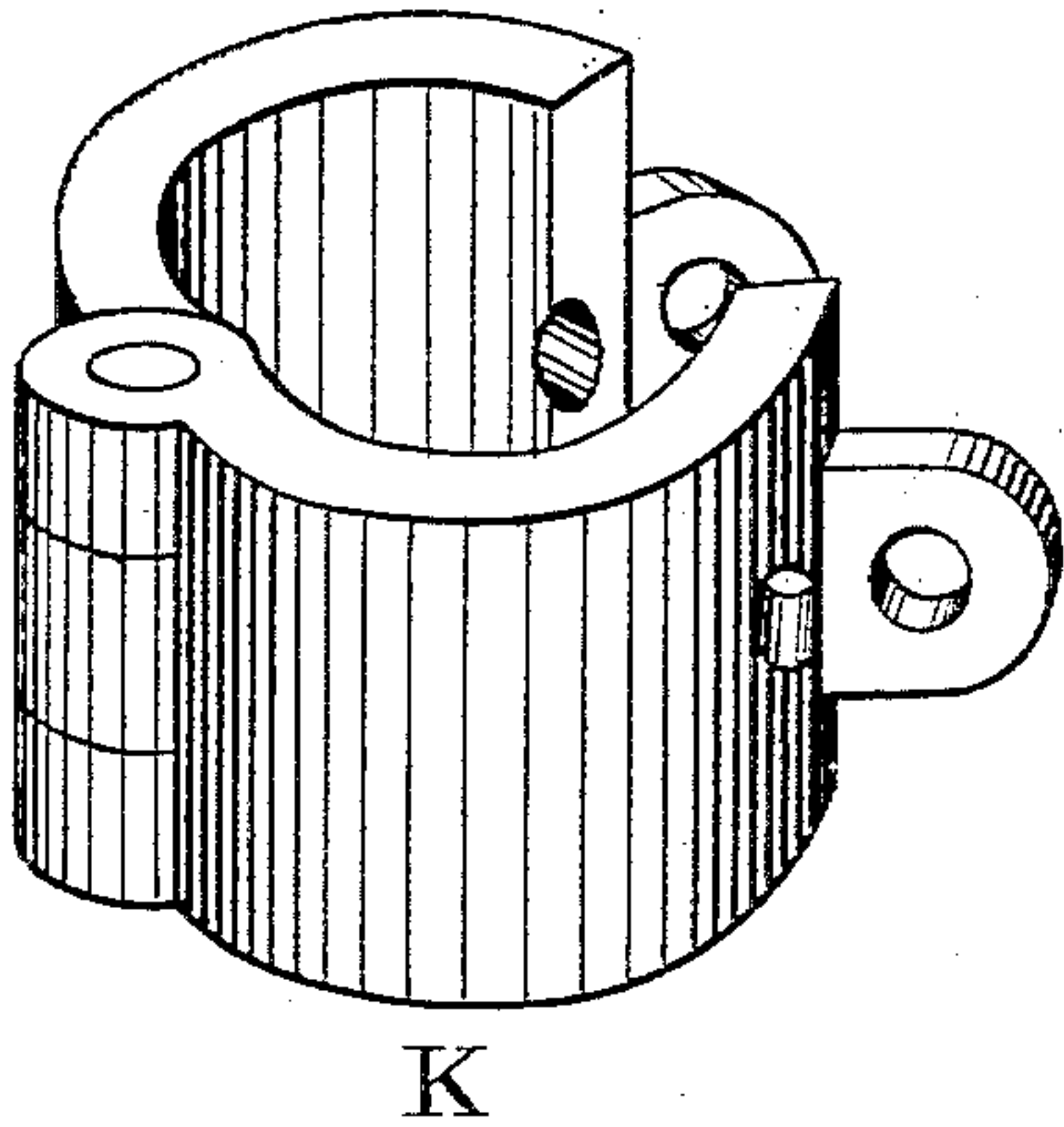


Fig. 2

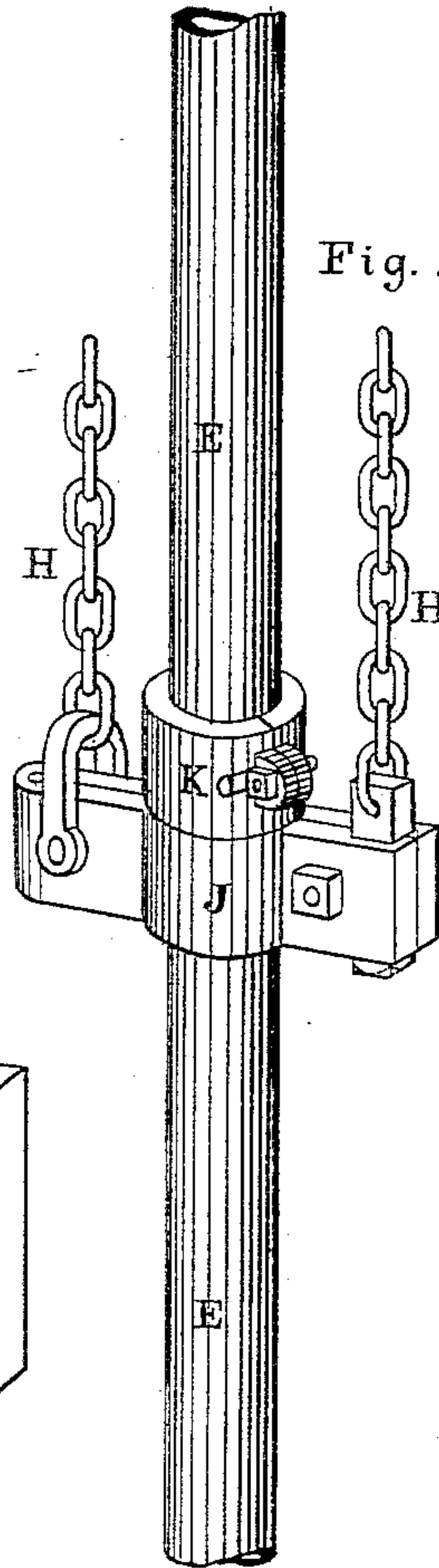
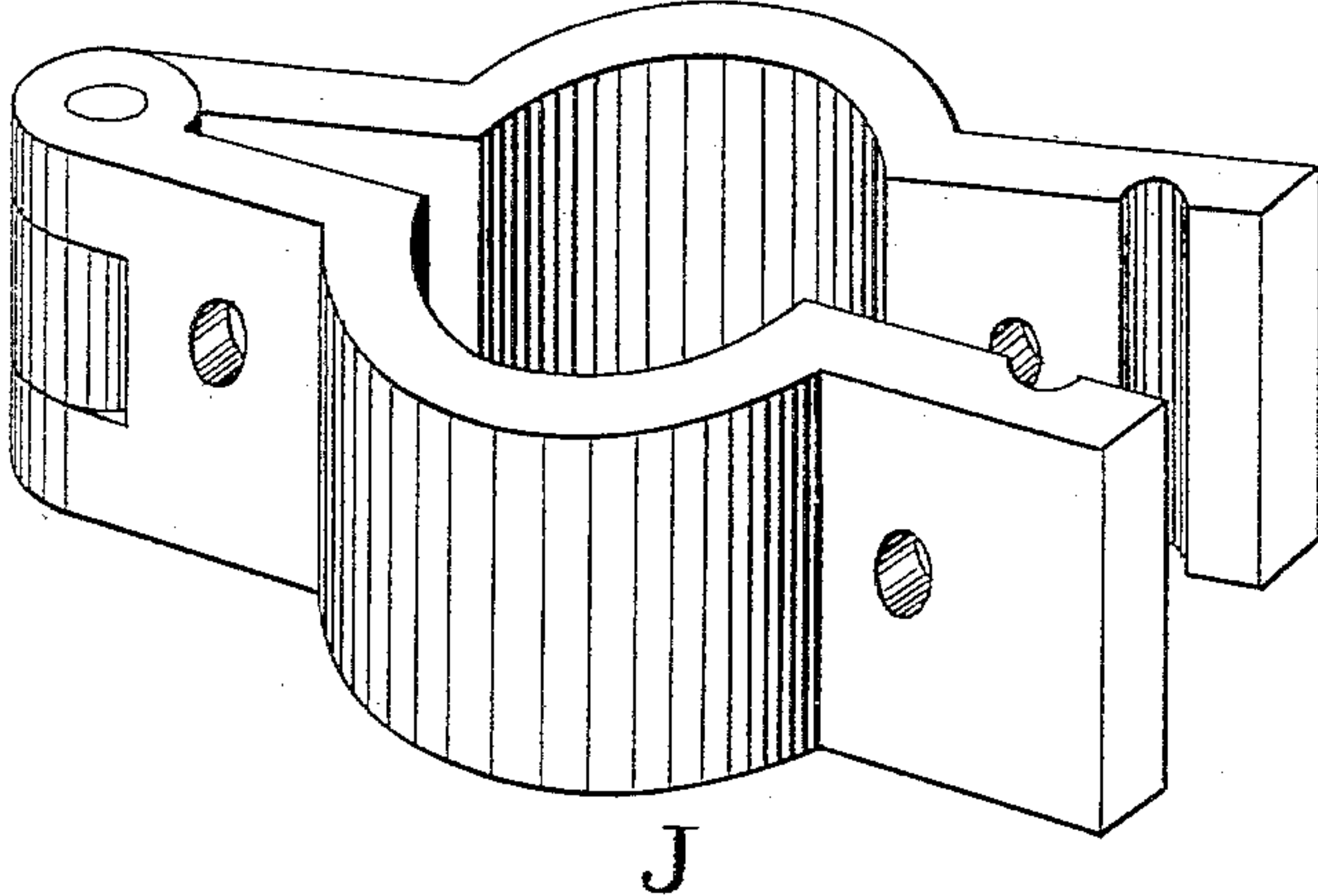


Fig. 3



Elias R. Lockwood

INVENTOR

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WITNESSES

Georg. F. French

Amos H. French



# UNITED STATES PATENT OFFICE.

ELIAS R. LOCKWOOD, OF BEATRICE, NEBRASKA.

## DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 504,599, dated September 5, 1893.

Application filed April 24, 1891. Serial No. 390,348. (No model.)

*To all whom it may concern:*

Be it known that I, ELIAS R. LOCKWOOD, a citizen of the United States, residing in Beatrice, Gage county, State of Nebraska, have  
5 invented certain new and useful Improvements in Drilling-Machines, of which the following is so full, clear, and exact a description as will enable others skilled in the art to which they appertain to make and use the same, reference being made to the accompanying drawings, in which—

Figure 1, is a perspective view of my improved drilling machine. Fig. 2, is a detailed view of the rigid collar and the sliding collar,  
15 and the pipe and chains of the drill proper. Fig. 3, is a detailed view of the sliding collar with the parts prepared separate. Fig. 4, is a similar view of the rigid collar.

The object of my invention is to provide a  
20 drilling machine by the use of which, the greatest amount of drilling may be accomplished in the shortest possible time and with the least expense of physical and mechanical force.

25 In the accompanying drawings, A, designates the walking beam or lever proper, which is attached to a jack B, on the ladder B', of the derrick C. The walking beam A, is bifurcated at its free end and in the lower outer  
30 portion of the slot F, formed by the bifurcated ends of the beam proper, is secured the friction roller D, which is journaled on suitable bearings D'. The friction wheel D, is adapted to run on the face of the double eccentric  
35 cam L, which is rigidly secured to the shaft L', which carries the cog wheel N, and the sprocket wheel M, which latter is connected through the medium of the sprocket chain M', with the pinion M<sup>2</sup>, on the shaft M<sup>3</sup>, through  
40 the medium of which rotary motion is imparted to the sprocket wheel M, and the double eccentric cam L, and the cog wheel N. The cog wheel N, meshes with a correspondingly toothed pinion on the shaft of the fly wheel O.

45 The drill stem proper is designated by the letter "E," which in this instance is a hollow pipe. This drill stem passes through the slot F, which extends back to the point a', through which at this point the drill extends vertically  
50 through the walking beam, where it is free to reciprocate vertically through the slot in the walking beam and virtually independent of

it, considered apart from the operating mechanism of the drill proper. The drill E, is provided with a rigid collar K, which may be ad- 55  
justed from time to time and locked in position on the drill. Beneath this rigid collar K, is a double ended sliding collar J, to each end of which is secured a chain H. These chains extend up approximately parallel with the 60  
drill E, and over the shives G G and connect with the link J', which is provided with a feed screw S, by means of which the chains H H, are simultaneously adjusted to any pre- 65  
determined length. The feed screw is supported by a stop s, through which extends the bolt b, which is screw-threaded to correspond with the screw threads on the inside of the feed screw. Rotary motion is imparted to the drill in the usual manner. 70

The operation of my device is as follows:—  
The machine being set in motion, the faces of the double eccentric cam L, will raise the roller D, which is journaled beneath the bifurcated ends of the walking beam A, thus raising the 75  
walking beam until the roller D, drops from the sharp free end of the cam. The beam and the double ended collar J will then drop and the drill E, will be allowed to fall and do its work. The drive wheel will continue to ro- 80  
tate the double eccentric cam and its shaft, and will regulate the speed of the same until the other half of the cam comes around and raises the walking beam thus repeating the motion, as above described. Water is forced 85  
through the pipe or drill by a force pump and it passes down through the pipe and comes up on the outside, completely washing away all chips and fragments which are cut up by the drill and keeping the face of the rock 90  
always clean.

From the foregoing, it will be readily understood that a drill operated in the manner shown and described, will do a much greater amount of work than any other known ma- 95  
chine with the same amount of applied power.

I do not wish to be understood as limiting myself to the exact construction shown and described, as many of the details may be varied at will and mechanical equivalents substituted therefor, without departing from the spirit of my invention, and without in any way impairing its usefulness. 100

Having described the objects, uses, and ad-



vantages of my device, what I believe to be new and what I wish to secure by Letters Patent, and therefore claim, is—

1. In a drilling machine of the character described, a walking beam; in combination with a drill and provided with a double chain and sliding collar and a drill having a rigid stop secured thereto in the line of the path of the sliding collar, substantially as described  
10 and for the purpose specified.

2. In a drilling machine of the character described, the main walking beam having an opening through which extends the drill; in combination with a drill provided with a rigid  
15 stop secured thereto and in the line of the path of the sliding collar; in combination with a double ended sliding collar provided with a pair of cables secured to a link, in common, and provided with shives secured to the  
20 walking beam, and also provided with a feed screw, operating the link to which the chains are connected to adjust the same, substantially as described.

3. In a drilling machine of the character described, a hollow drill provided with a rigid stop secured thereto, said stop adapted to be adjusted and locked in any position desired; in combination with a tilting walking beam, having an opening through which the drill  
25 passes, and provided with a pair of shives and

a pair of chains, supporting a sliding collar, which encircles the drill beneath the rigid stop, said chains adjustable, through the medium of the screw threaded bolt *b*, connected with a link *J'*, extending through a stop *s*,  
35 provided with a hand screw *S*, substantially as and for the purposes specified.

4. In a drilling machine of the character described, a shaft carrying a double eccentric cam and a sprocket wheel and a gear wheel,  
40 meshing with a pinion on a second shaft, provided with a fly wheel; in combination with a walking beam, provided with a slot *F*, at the open end of which is a friction wheel *D*, and through the inner portion of which extends  
45 the drill *E*, and the drill provided with a rigid stop and a sliding collar encircling the drill beneath the stop and adjustable cables for supporting the sliding collar and adjustably  
50 secured to the walking beam, and the means for operating the same, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand and affixed my seal this 20th day of April, A. D. 1891.

ELIAS R. LOCKWOOD. [L. s.]

In presence of—

J. B. MEYER,

ALEX. GRAHAM.