

(No Model.)

G. SIEBENS.
WELL DRILLING MACHINE.

No. 470,262.

Patented Mar. 8, 1892.

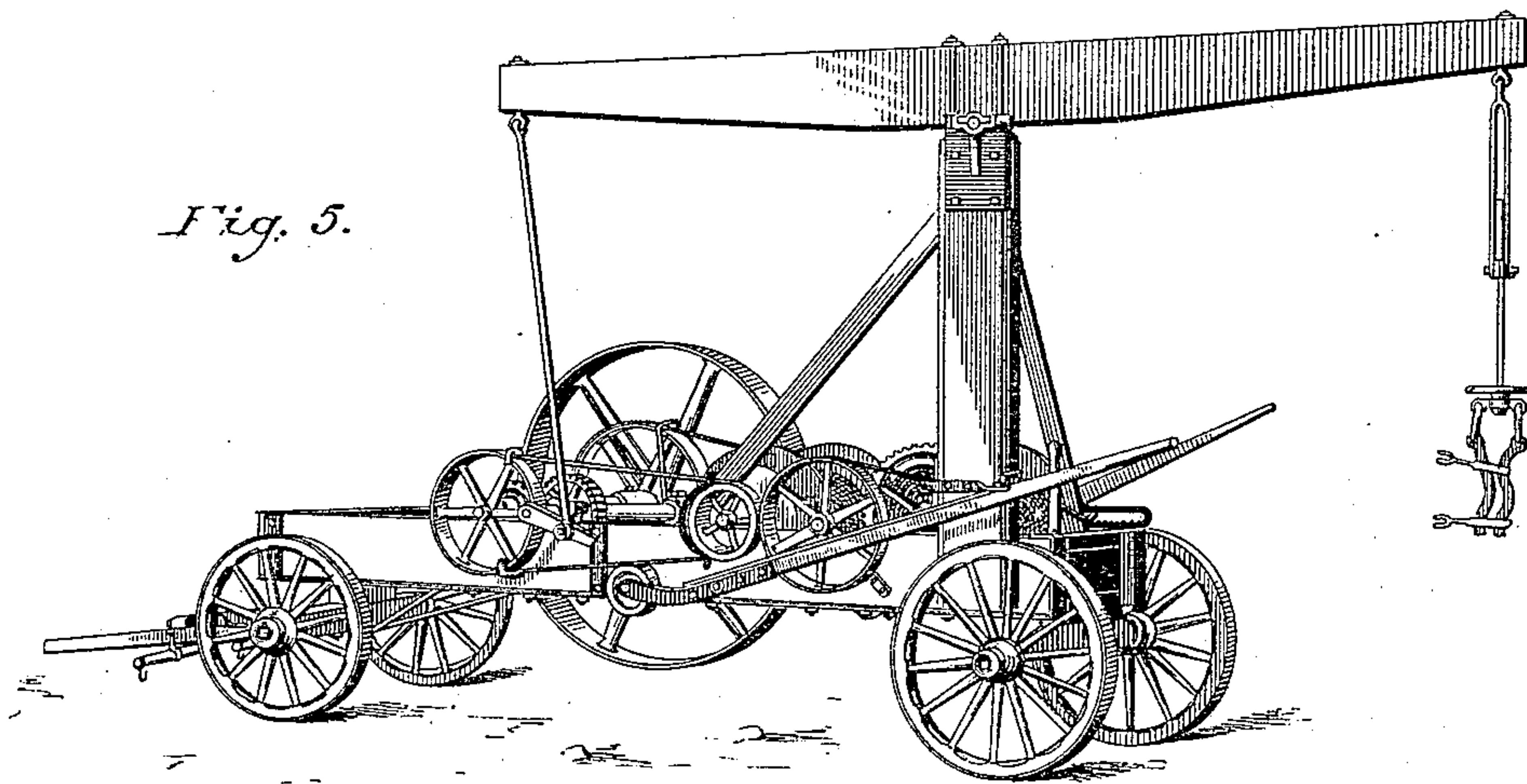


Fig. 1.

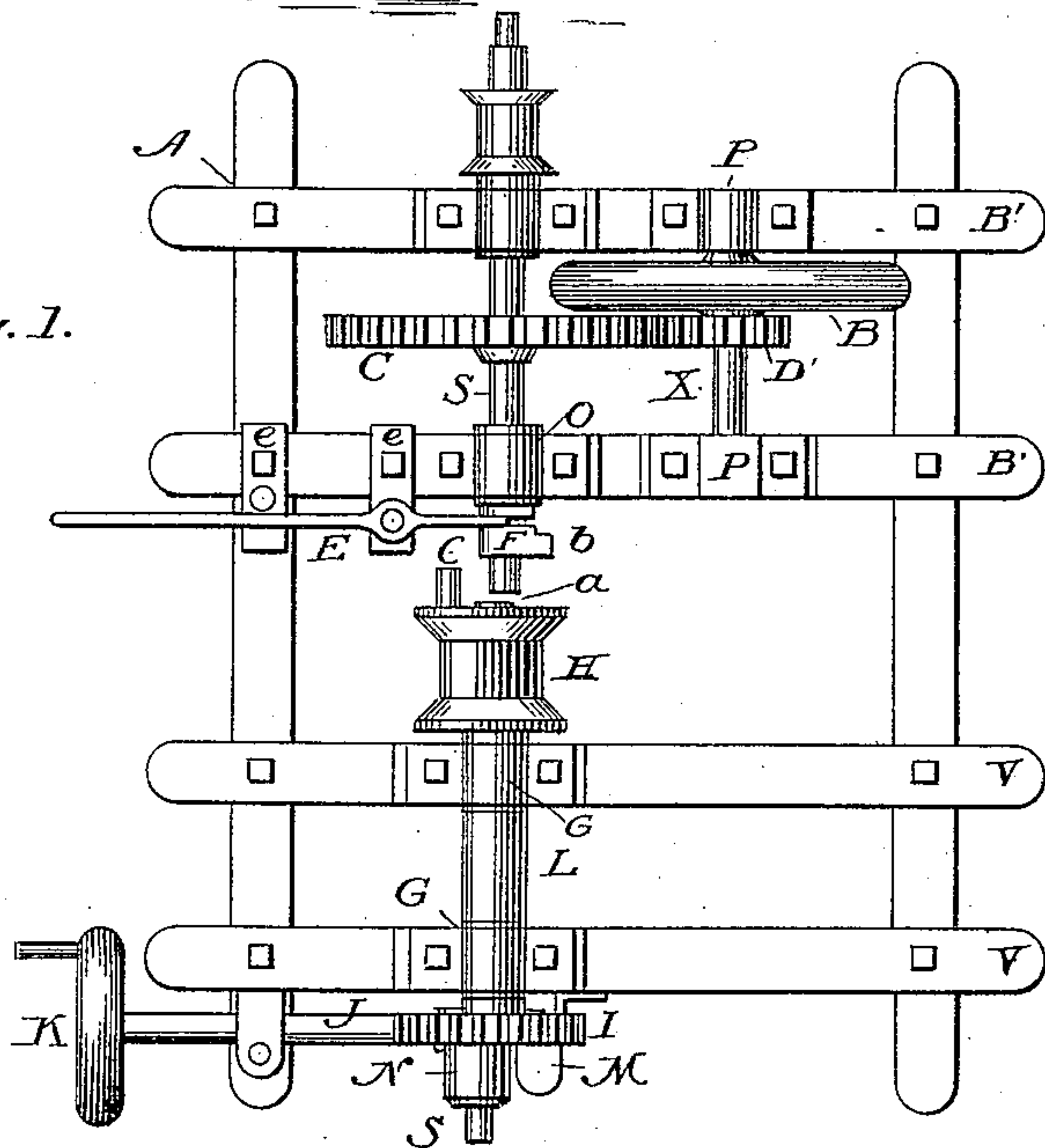


Fig. 4.

Fig. 2.

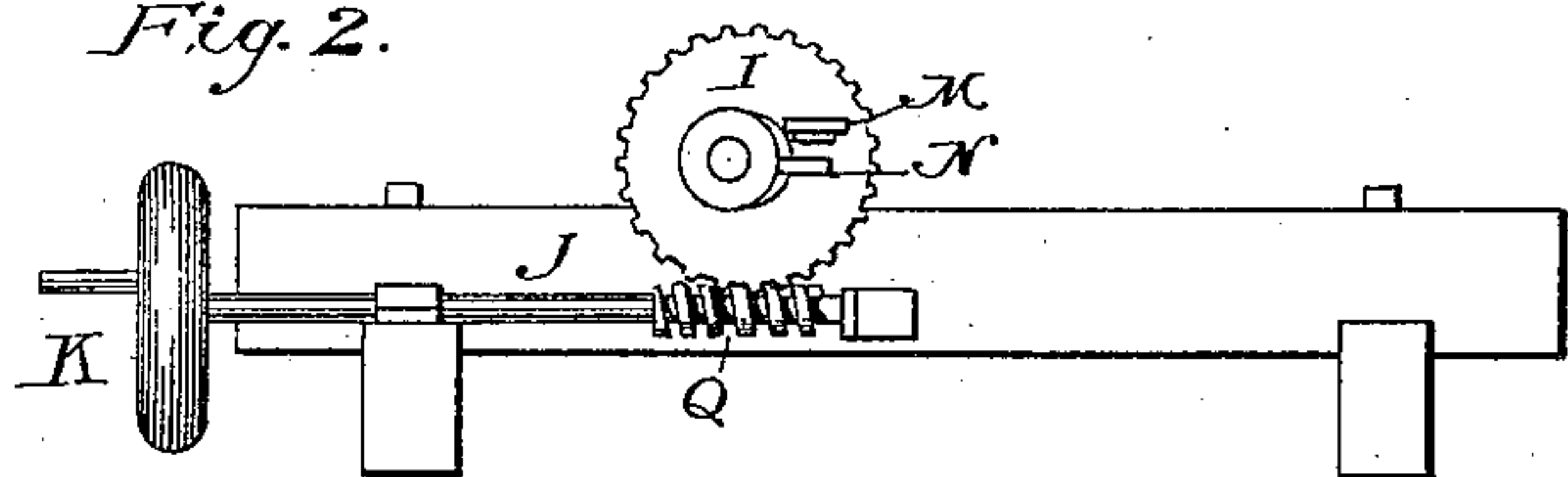
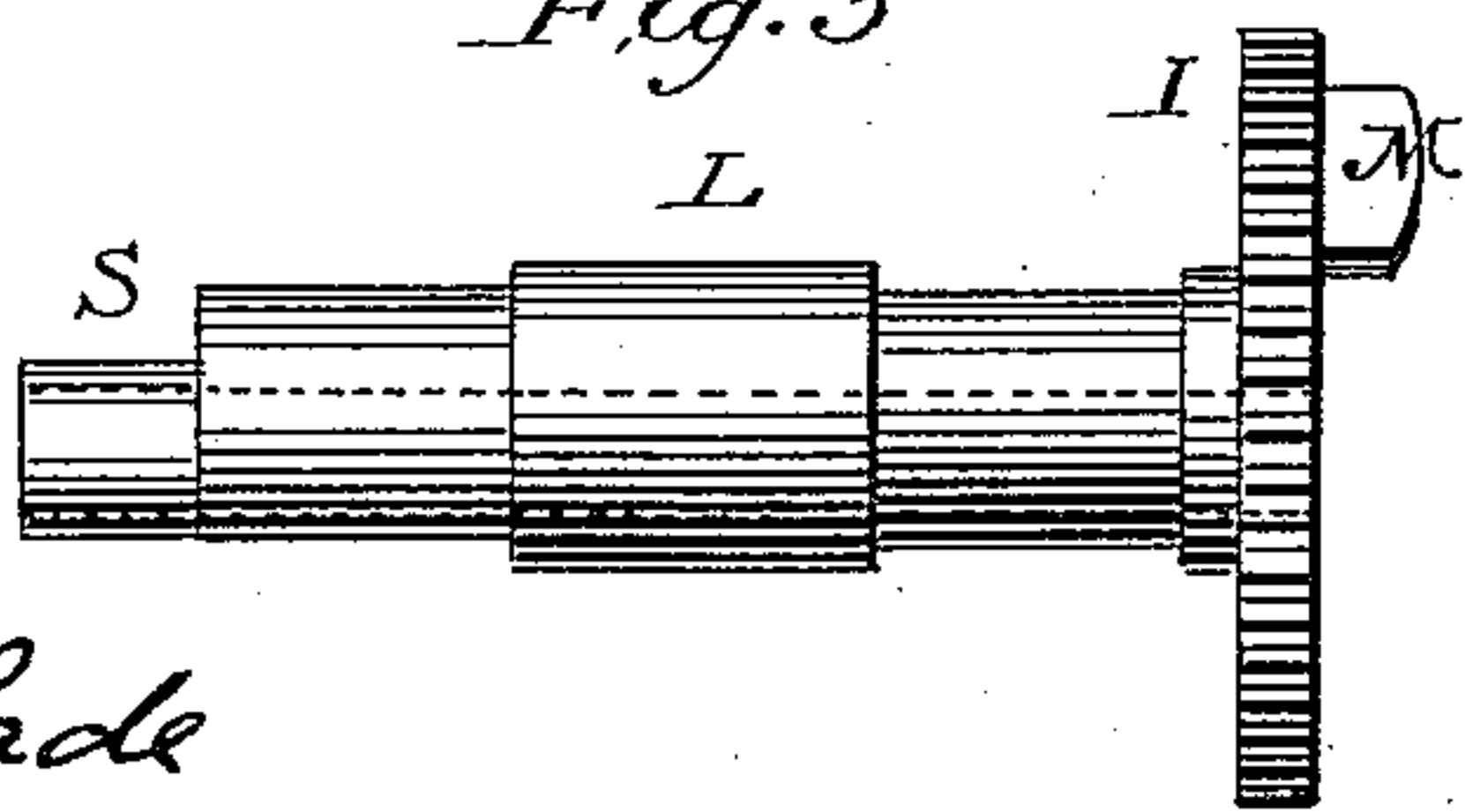


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE SIEBENS, OF STORM LAKE, IOWA, ASSIGNOR OF ONE-THIRD TO
THE PECK MANUFACTURING COMPANY, OF SAME PLACE.

WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,262, dated March 8, 1892.

Application filed April 13, 1891. Serial No. 388,802. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SIEBENS, a citizen of the United States, residing at Storm Lake, in the county of Buena Vista and State of Iowa, have invented certain new and useful Improvements in Well-Drilling Machines; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention has relation to well-drilling machines; and the object is to introduce into such machines a divided shaft, one half of which is true set and the other half set out of center, the inside end of one half intended to travel around the inside end of the other half to produce a new movement or throw that effects a drop of the drilling-tools in a new and decidedly different manner from any arrangement of parts now in use for that purpose.

My invention therefore consists in the novel construction and arrangement of the parts and the combination thereof, as will be hereinafter fully described, and particularly pointed out in the claims.

I have fully and clearly illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a top view looking down upon the frame and gearing in a well-drilling machine, showing my invention of a divided shaft. Fig. 2 is an end view showing end of shaft, crank-wheel, feed-worm, worm-gear, stop, and bumper. Fig. 3 is a view showing the part of the shaft which carries the worm-gear provided with a stop, also showing formation of the outer shaft and the manner in which the inner shaft is eccentrically set therein. Fig. 4 is an end view of worm-gear and stop, also showing end of the inner shaft, which is eccentrically set into the outer shaft. Fig. 5 is a view of a well-drilling machine complete.

Referring now to the illustrations, wherein like parts are designated by similar letters of

reference, A designates the frame, which is of any suitable construction.

A' designates the spool, which carries the rope or cable used for hoisting the tools.

B designates the fly-wheel mounted on the shaft X, which is suitably journaled in the boxes P P, located upon the cross-pieces B' B' of the frame A.

C' designates the spur gear-wheel mounted upon the shaft S, which is suitably journaled in the boxes O O upon the cross-pieces B' B' of the frame A.

D designates the spur-pinion, also mounted upon the shaft X, and is intended to gear with the spur gear-wheel C'.

S designates the power-shaft divided at *a*, as shown, the part of the divided shaft upon which the spur gear-wheel is mounted being true set or set in the center.

E designates a hand-lever resting upon the plates *e e* and used to throw the clutch in and out of gear.

F designates a clutch provided with the cam or knocker *b*, mounted upon shaft S and adapted to be moved upon said shaft by the lever E. The cam or knocker *b* is intended to engage the roller *c*, provided on the inside of the spool H to effect a drop of the drilling-tools, as hereinafter described.

H designates the rope-spool which carries the rope, which passes over a derrick, and to the end of which the drilling-tools are attached.

L designates a hollow shaft or core suitably journaled in the boxes G G, located upon the cross-pieces V V of the frame A. This shaft I call the "outer shaft," and it is formed in the shape shown in Fig. 3. Inside of this shaft is set an inner shaft which forms the continuation of the divided shaft S. This inner shaft is eccentrically set into the outer shaft and revolves therein, and is shown by the dotted lines in Fig. 3. The outside shaft being true set, it constitutes the feed or operates to pay out the rope to feed the drill by the worm-gearing, and the inside shaft being eccentrically set constitutes the drop of the drill.

I designates the worm-gear, and is suitably mounted on the shaft L.

M designates a stop or metal stud, being rubber-tipped to prevent jarring of the machine when said stop is engaged by the bumper N.

J designates the feed-worm shaft, carrying the feed-worm Q. This shaft is provided with the crank-wheel K. This feed-worm gears with the worm gear-wheel, and by operation of the crank-wheel K feeds the rope upon spool H to lower the drilling-tools. The crank-wheel K is turned from right to left to lower the tools, and the reverse to raise the tools.

N designates a bumper mounted upon the continuation of shaft S, as shown, its spur being adapted to engage the stop M and prevent jarring of the machine, as above described, and to lengthen or shorten the stroke of the drop produced by the action of the divided shaft.

By using a divided shaft I secure a mechanical movement as follows: One part of the shaft being set out of center or eccentrically set and the other part being set in center, the inside end of that part of the shaft set out of center working around the inside end of that part of the shaft set in center causes at a certain point one end of the shaft to run off when the cam or knocker strikes the roller *c*, producing a trip or throw for dropping the tools. The bumper N, acting upon the stop M, and set by means of the feed-worm gearing with the worm gear-wheel by revolving the crank-wheel K, acts to regulate the stroke of the drop to shorten or lengthen it, as desired. The stop M being rubber-tipped, when the bumper N strikes it, it prevents the machine from being jarred. The stop M and the worm gear-wheel being mounted upon the outer shaft L and the bumper N being mounted upon the eccentrically-set inner shaft S and adapted to strike upon said stop, it will be seen that the feed arrangement works in conjunction with the divided shaft to effect the results desired.

The operation is readily perceived. By means of the lever E the clutch is thrown into gear upon the shaft, and power being attached to shaft S the inside end of that part of the shaft which is eccentrically set begins to travel around the inside end of that part of the shaft which is true set, the cam *b* of the clutch F engages the roller C on the rope-spool H, and as one end of the shaft runs off of the other end or reaches the farthest point out of center the cam releases the roller, producing a drop or throw which is imparted to the drilling-tools attached to the end of the

rope running over spool H, and the tools will then be operated by means of the throw obtained.

The operation of the bumper at the end of the shaft has previously been described.

I am aware that feed mechanism of a similar character has been used in machinery; but I claim a new arrangement of the same in connection with an outer shaft containing an eccentrically-set inner shaft and an adjustable bumper and stop to regulate the stroke and to prevent jarring of the parts while in operation.

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

1. The combination of the frame A, fly-wheel B, spur-pinion D, spur gear-wheel C', the shafts X and S, upon which said wheels and pinion are mounted, together with their respective boxes, the spool A', clutch F, provided with cam *b*, lever E, spool H, provided with roller C, the shaft L, containing an eccentrically-set inner shaft S, the worm-gear I, provided with the stop M, mounted on shaft L, the bumper N, mounted on the shaft S, the feed-worm Q, with its shaft J, and the crank-wheel K, all arranged, substantially as shown, to form a mechanical movement, and for the purposes herein set forth.

2. In a mechanical movement, the combination of frame A, provided with the fly-wheel B and spur-pinion D, mounted upon the shaft X, the shaft S, divided at its center, as at *a*, the spur gear-wheel C', mounted upon said shaft, a clutch F, also mounted on said shaft and adapted to be moved back and forth on the shaft by means of lever E to be thrown in and out of gear, the spool H, carrying the rope to which the drilling-tools are attached, and an outer shaft L, set in center or true set, containing an inner shaft set out of center or eccentrically set, which constitutes one half of the divided shaft S and which operates in connection with the other half and with cam *b* of clutch F and roller C to produce a mechanical movement for dropping the drilling-tools, all arranged as shown and intended to operate for the purpose specified.

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

GEORGE SIEBENS.

Witnesses:

W. M. THOMPSON,
O. L. CHASE.