

(No Model.)

2 Sheets—Sheet 1.

J. L. McCLUGHEN.

ROCK DRILL.

No. 258,094.

Patented May 16, 1882.

Fig. 2.

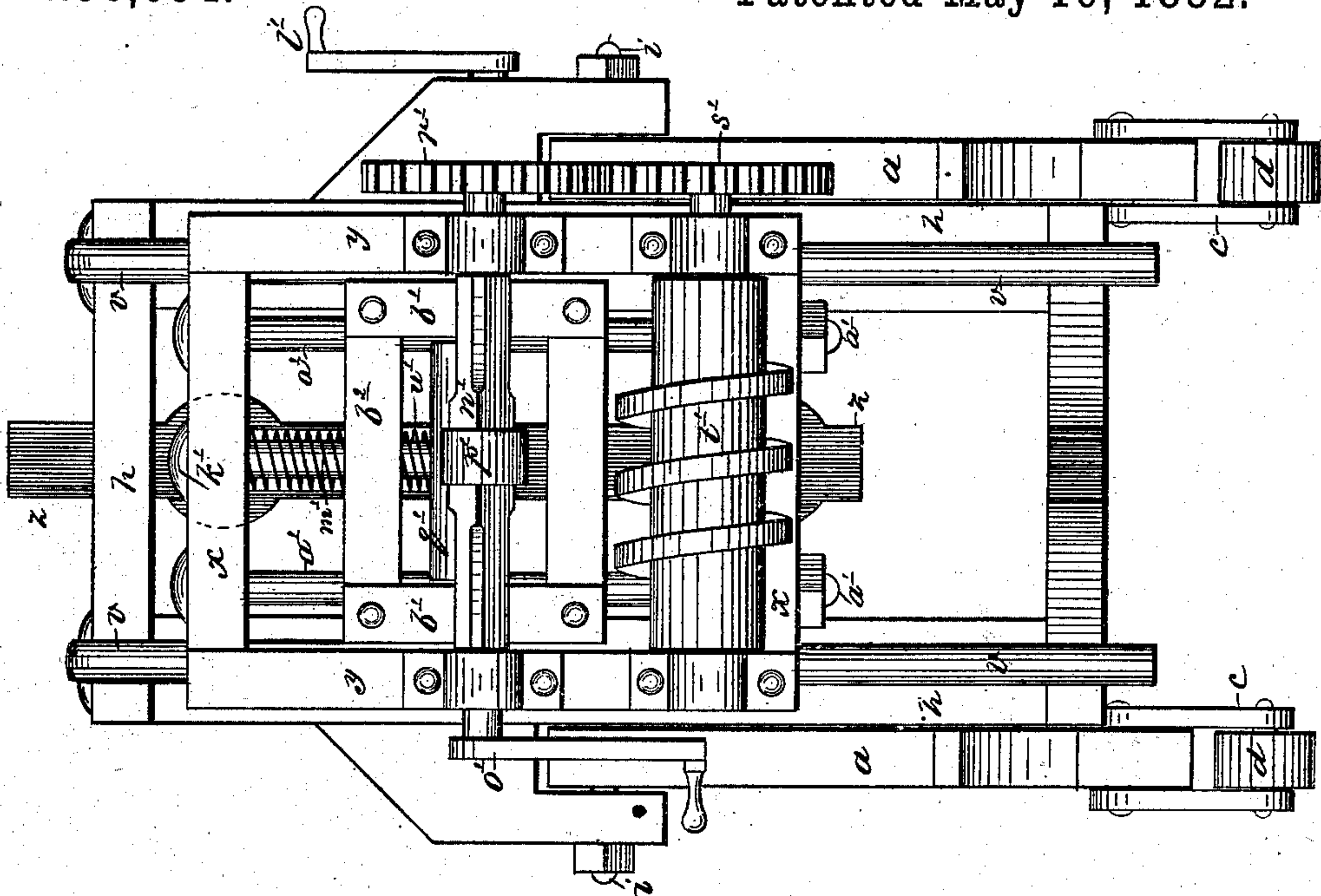
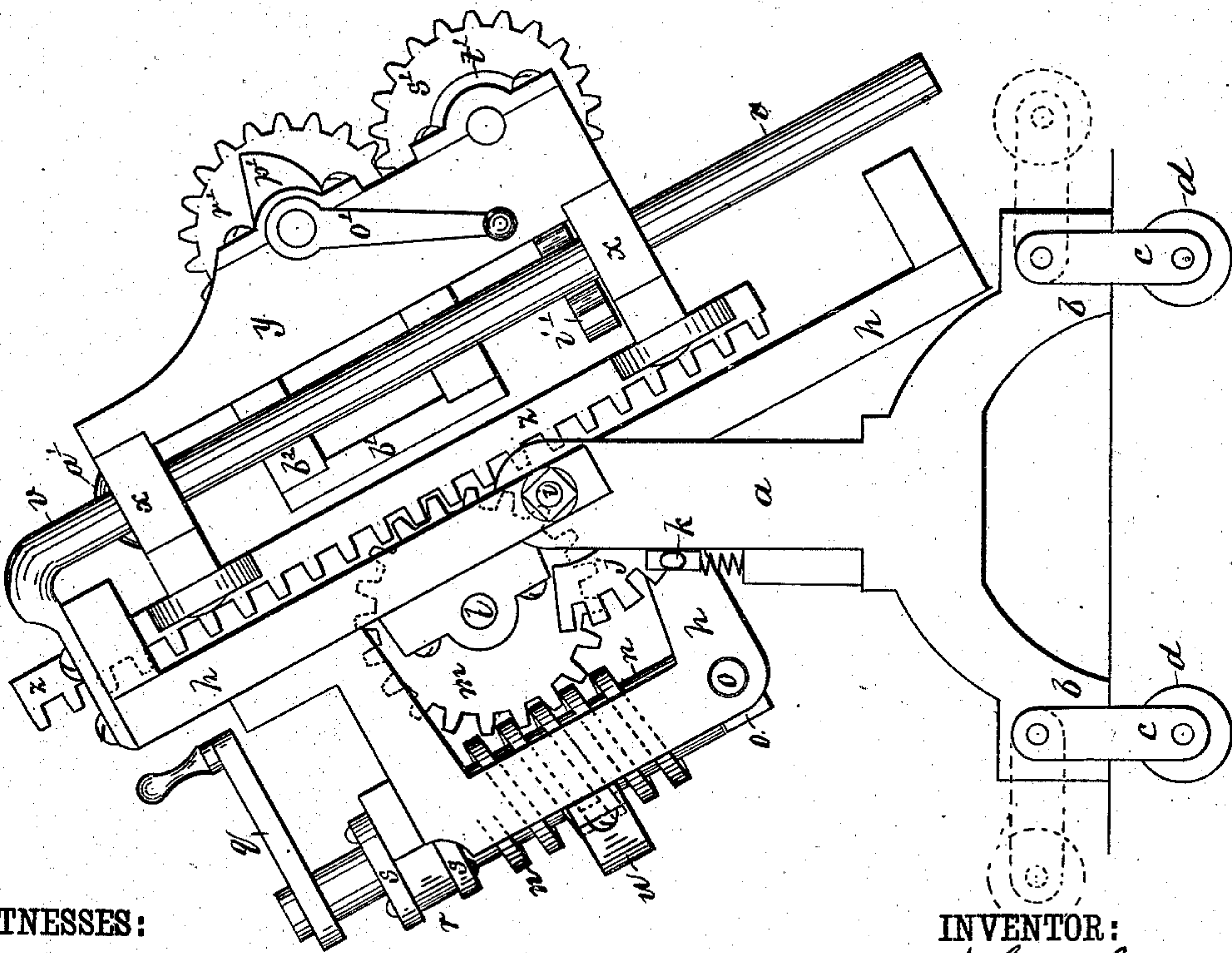


Fig. 1.



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Fig. 5.

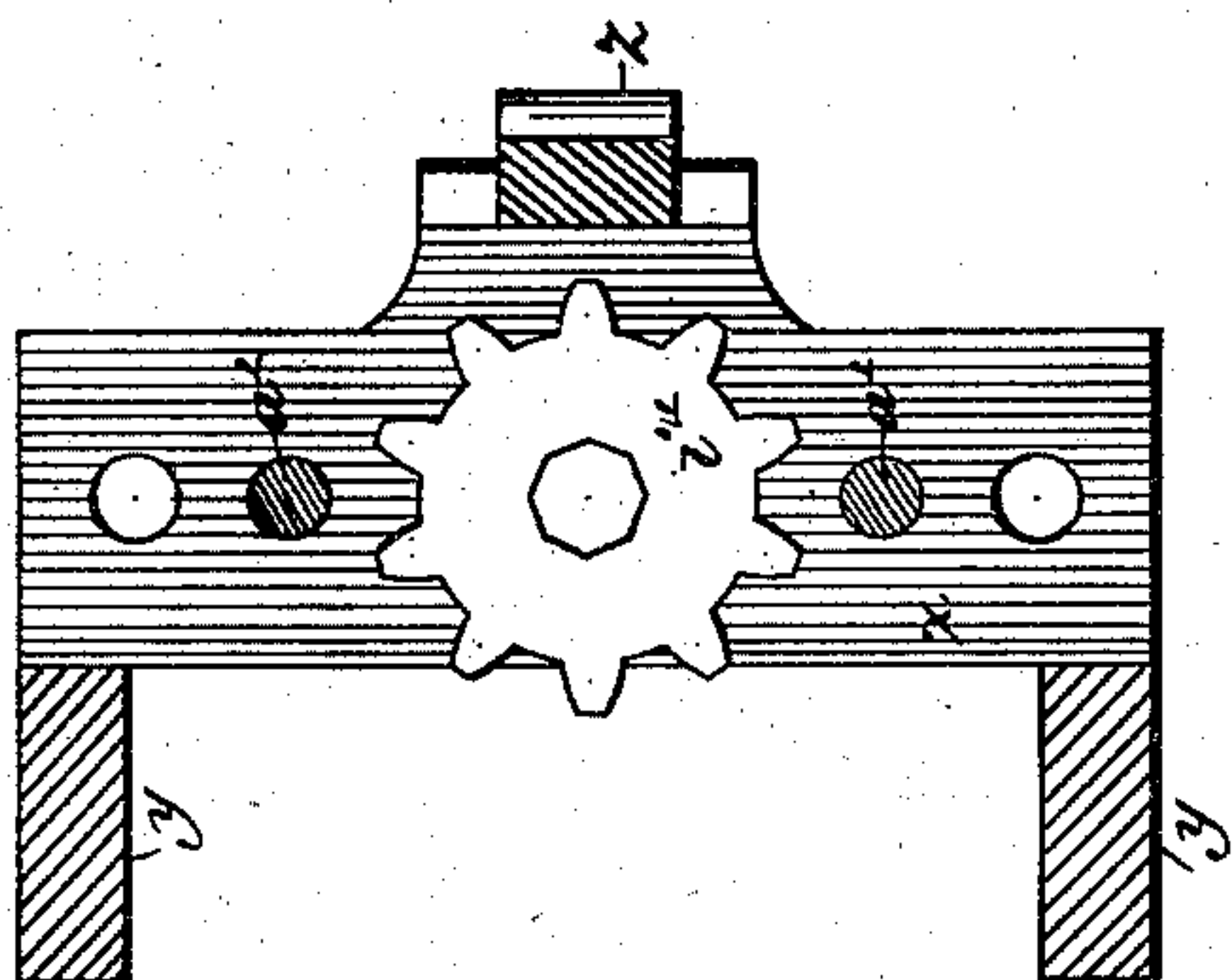


Fig. 4.

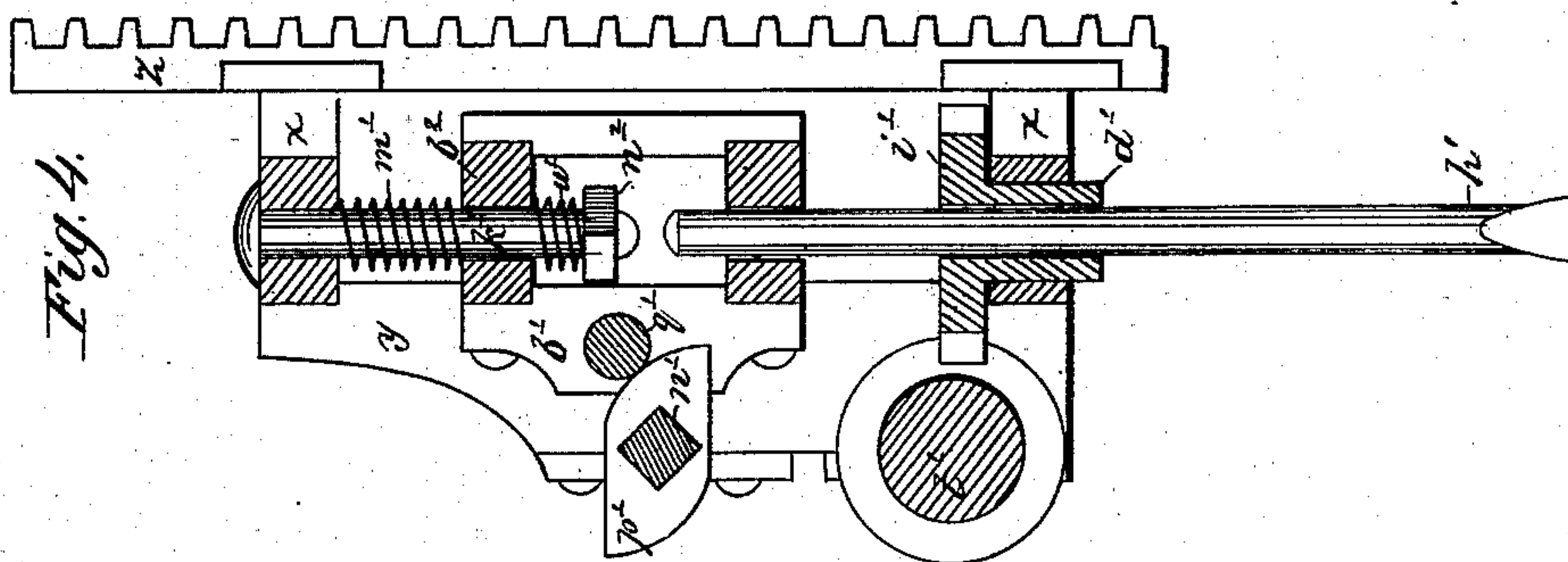
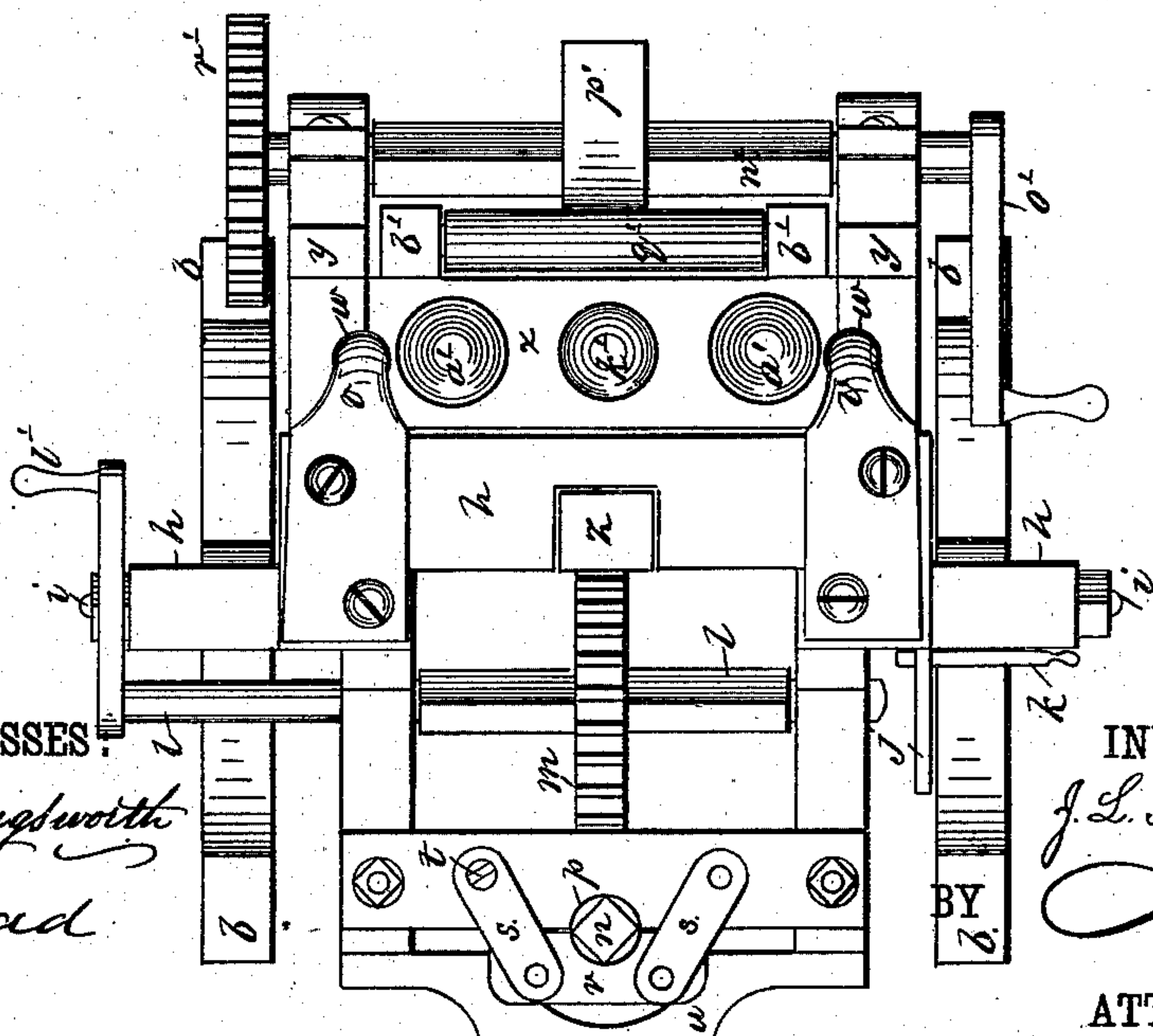


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH L. McCLUGHEN, OF OZARK, MISSOURI.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 258,094, dated May 16, 1882.

Application filed December 1, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. McCLUGHEN, of Ozark, in the county of Christian and State of Missouri, have invented a new and useful Improvement in Rock-Drills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved rock-drill. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view, and Figs. 4 and 5 are detail sectional views, of the frame *y*.

My invention relates to improvements in rock-drills; and it consists in the peculiar construction and arrangement of the parts, as hereinafter more fully set forth.

In the accompanying drawings, *aa* represent the legs which support the rock-drill. The legs are constructed with curved feet *b*, placed wide apart, so as to set steadily on an uneven surface, and provided with frames *c*, pivoted to the feet at their upper ends and carrying rollers *d* at their lower ends. By this construction the rollers can be swung under the feet when it is desired to move the machine, and when the latter has reached the desired position the rollers can be swung into a horizontal position, with the feet resting steadily on the ground or rock.

h represents a frame, open at its middle and pivotally secured to the upper ends of the legs of the machine by bolts *i i*, passing through holes in the middle of the longitudinal sides of the frame *h* and through the upper ends of the legs. *j* represents a segmental rack-bar, secured to one side of the frame *h*, and adapted to engage with a spring-catch, *k*, pivoted to one of the legs. By this construction the frame *h*, carrying the drill, can be swung on its pivots as desired, so as to set the drill at any desired angle or position from a vertical to a horizontal one, and may be held in any desired position by means of the spring-catch and segmental rack-bar above described.

l represents a horizontal shaft, journaled in the sides of the frame *h*, and provided with a crank, *l'*, and a pinion, *m*, adapted to engage with a vertical worm, *n*, having its lower bearing in a rock-bar, *o*, which has its ends journaled in the sides of the frame *h*. The worm *n*

has its upper bearing in a hole, *p*, in a transverse bar in the frame *h*, and the upper end of the worm-shaft is provided with a crank, *q*. The hole *p*, which serves as the upper bearing for the worm *n*, is made open on one side, which opening is closed, when desired, by means of a jointed clamp, *r*, made up of links *s*, pivoted together. One end of the clamp *r* is pivoted to the transverse bar near the hole *p*, and is passed around the worm-shaft, and the links *s*, at the opposite end of the jointed clamp, are provided with holes for the passage of a pin, *t*, through said holes and through corresponding ones in the transverse bar in the frame *h*, whereby the worm is held vertically and in gear with the pinion *m*. If, however, it is desired to throw the worm and pinion out of gear, the pin *t* and jointed clamp are removed, the bar *o* is rocked, and the worm is thrown out of engagement with the pinion, and is supported by the cross-bar *u*, hollowed out near its middle to receive it.

v v represent parallel vertical guide-rods, bent at right angles at their upper ends and secured to the upper end of the frame *h*. The guide-rods *v v* pass through holes *w w*, made in the parallel transverse bars *x x* of the frame *y*, the rods *v v* thus serving as guides for the frame *y* in its reciprocations.

z represents a vertical rack-bar, secured to the inner face of the frame *y*, and adapted to engage with the pinion *m* on the shaft *l*.

a' a' represent parallel-headed guide-bolts, which pass through opposite holes in the cross-bars of the frame *y* and through similar holes in the parallel cross-bars of a rectangular open frame, *b'*. The bolts *a' a'* serve as guide-rods for the rectangular frame *b'* in its reciprocations, and are screw-threaded at their lower ends and pass through holes in the lower plate, *x*, which is secured to the lower end of the frame *y* by nuts engaging with the ends of the screw-threaded bolts *a' a'*, thereby securely holding the plate *x* in place. The lower plate, *x*, is also provided with a central hole, provided with a thimble, *d'*, preferably of octagonal form, through which a drill, *h'*, of the same form passes, the thimble steadying the drill in its reciprocations. The drill *h'* passes through the central hole in the lower plate, *x*, thence through a central hole in the lower transverse

bar of the frame *b'* to which the drill is detachably secured.

k' represents a headed bolt, screw-threaded at its lower end, which passes through central holes in the upper cross-bars of the frames *y b'*, and is provided with a nut, *n²*, at its lower end, and a coiled spring, *m'*, encircling the bolt *k'* between the upper transverse bars of the frames *y b'*, the ends of the spring bearing against the transverse bars. By this construction the frames *y b'* are adapted to reciprocate together on the guide-rods *v v*, or the frame *b'*, carrying the drill, can be reciprocated alone on the guide-bolts *a' a'*.

n' represents a shaft journaled in the frame *y* and provided with a crank, *o'*, at one end, a tappet, *p'*, near its middle, adapted to engage with a longitudinal roller, *q'*, journaled in the frame *b'*, and a pinion, *r'*, at its opposite end, which engages with the pinion *s'* on the shaft of a worm, *t'*, journaled in the frame *y* and engaging with a worm-wheel, *i'*, fitted in the lower transverse bar of the frame *y*. The worm-wheel *i'* is provided with a central octagonal hole, through which the drill passes.

u' represents a coiled spring encircling the lower end of the bolt *k'* between the nut *n²* and the lower face of the transverse bar *b²* of the frame *b'*.

The operation of the machine is as follows: The machine is wheeled to the desired position for drilling the rock on its rollers, which greatly facilitates its movements, and the rollers are then swung into a horizontal position, so that the feet will rest firmly in position. The drill is then set at any desired angle by swinging the frames on their journals and locking them in position by means of the spring-catch and segmental rack described. The crank *q* of the worm-shaft is then turned until the drill strikes or touches the rock; or, if it be desired to raise or lower the drill more rapidly, the clamp-pin *t* is removed, the clamp opened, the worm *n* is swung over on the rock-ing bar, on which its lower end rests, and the worm rests on the cross-bar *u*, and the crank *l'* is operated, which, through the pinion *m* and rack-bar *z*, raises or lowers the drill more speedily. Motion is then imparted to the crank *o'*, which, by means of the tappet on the crank-shaft, raises the drill-frame, which, after the tappet passes the roller, is forced down by the spring, thus giving a rapid reciprocating movement to the drill, which is also turned as it reciprocates by the worm-wheel *i'* engaging with the worm *t'*. The function of the coiled spring *u* on the lower end of the bolt *k'* is by its recoil to raise the drill off the rock when it strikes and prevent the drill-bit

from catching in the sides of the cavity made by it in the rock, if it should turn slightly before it leaves the cavity made by it in the rock.

I claim as my invention—

1. The combination, with a rock-drill frame secured to the upper ends of its legs, and legs *a*, provided with curved feet *b*, of the swinging roller-frames *c d*, pivoted to the feet, whereby the rollers can readily be swung under the feet when it is desired to move the machine, and when the latter has reached the desired position the roller-frames can be swung into a horizontal position, with the feet of the drill resting on the ground, substantially as described.

2. The combination, with the frame *h*, provided with the guide-rods *v v*, and frame *y*, adapted to slide on said guide-rods and provided with the guide-bolts *a' a'*, of the roller-frame *b'*, carrying the drill-bolt *k'*, coiled spring *m'*, and crank-shaft *n'*, provided with a tappet, *p'*, substantially as described, and for the purpose set forth.

3. The combination, with the frame *y*, provided with the guide-bolts *a' a' k'*, and spring *m'*, of the frame *b'*, carrying the roller *q'*, shaft *n'*, carrying the tappet *p'*, pinions *r' s'*, worm *t'*, and worm-wheel *i'*, substantially as described, and for the purpose set forth.

4. The combination, with the frame *y*, provided with guide-bolts *a' a'*, having nuts on their ends, of the plate *c'*, having a central hole for the passage of the drill and thimble *d'*, substantially as described, and for the purpose set forth.

5. The combination, with the frame *b'*, carrying the drill-bolt *k'* and nut *n²*, of the spring *u'*, encircling the lower end of the bolt and lying between the upper cross-bar, *b²*, of the frame *b'* and the nut *n²*, substantially as described, and for the purpose set forth.

6. The combination, with the shaft *l*, carrying the pinion *m*, and frame *y*, carrying the rack-bar *z*, of the worm *n*, adapted to be thrown in or out of engagement with the pinion, substantially as described, and for the purpose set forth.

7. The combination, with the shaft *l*, carrying the pinion *m* and worm *n*, journaled at its lower end in the rock-bar *o*, and having its upper bearing in a hole, *p*, open on one side, of the jointed clamp *r* and pin *t*, substantially as described, and for the purpose set forth.

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Witnesses:

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AHNUS HARRINGTON,
JNO. C. ROGERS.