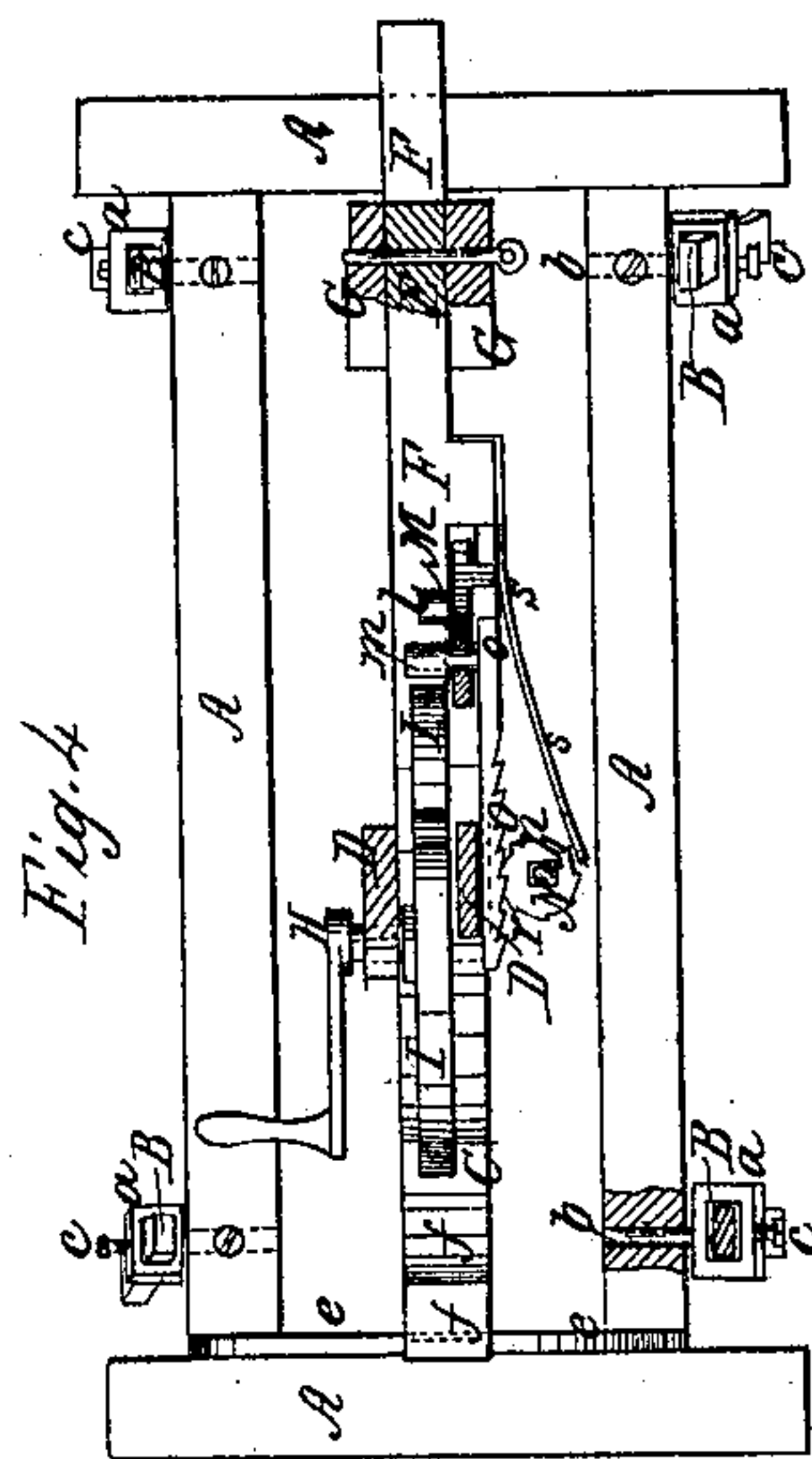
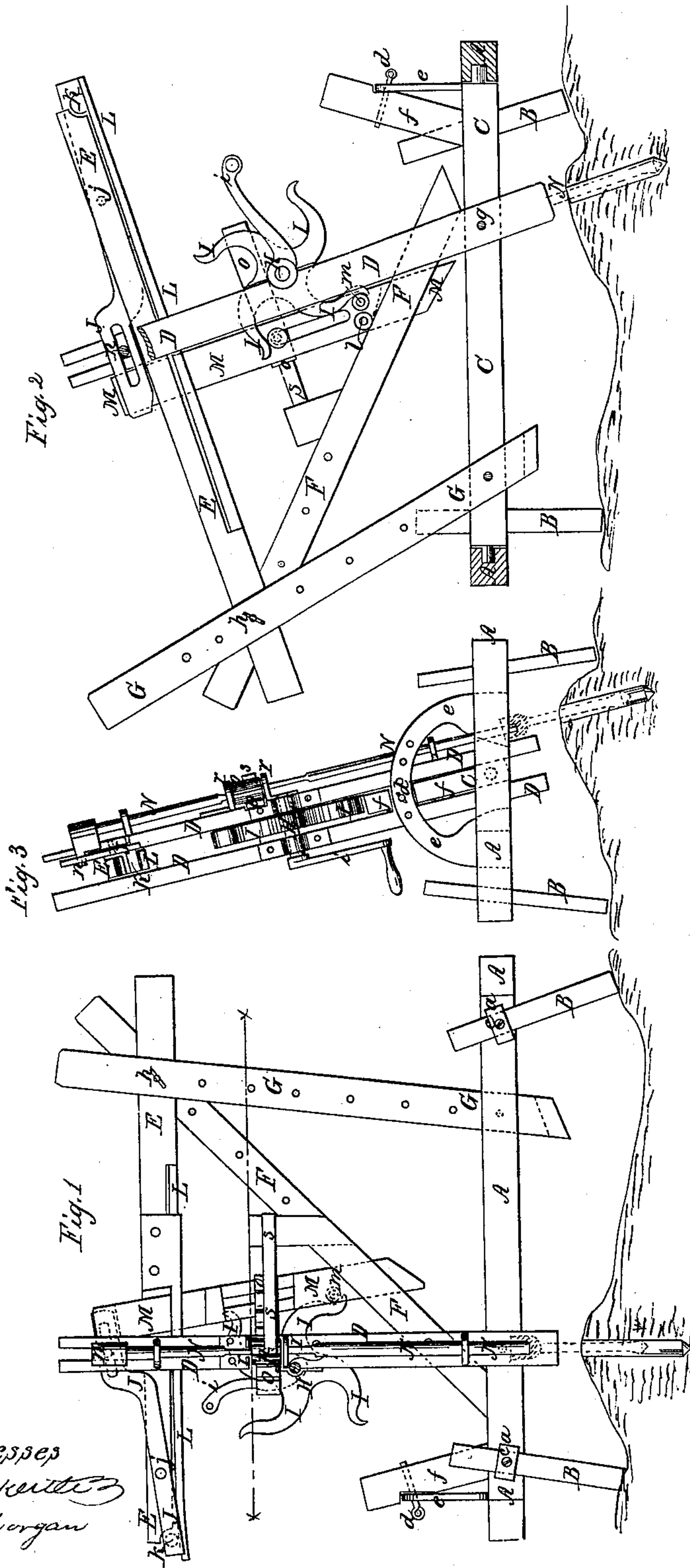


R. Gidley

Rock Drills.

No. 84,543.

Patented Dec. 1, 1868.



Witnesses
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ROBERT GIDLY, OF FREEDOM PLAINS, NEW YORK.

Letters Patent No. 84,543, dated December 1, 1868.

IMPROVED ROCK-DRILLING MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ROBERT GIDLY, of Freedom Plains, in the county of Dutchess, and State of New York, have made and invented a new and improved Rock-Drilling Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figures 1 and 2 are side elevations of my improved rock-drilling machine;

Figure 3 is a front elevation of the same; and

Figure 4 is a horizontal section of the same, taken in the plane of the line *x x*, fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to a new machine for drilling rocks and other substances, and consists, more particularly, of a frame, which can be adjusted in every direction, so as to bring the drill into any desired position, and of a new apparatus for operating the drill, which apparatus works so as to impart to the drill, in conjunction with a reciprocating motion, also an intermittent rotary motion, and the whole machine is so arranged that it is simple and effective, and substantial throughout.

A represents a horizontal frame, consisting of wooden or other bars or beams, of suitable size and shape. This frame is supported upon legs, B B, which are also of suitable size and material.

The legs are fitted through loops or eyes, *a a*, that are pivoted to the side of the frame A, so that they can turn on their pivot-pins *b*, fig. 4, while the legs are lengthwise adjustable in the loops, and can be clamped therein by means of set-screws, *c c*. The legs are thus up-and-down adjustable, and can be also brought into any desired inclined direction, so that the frame can be put up in the desired position on any kind of uneven, or on sloping or level ground.

C represents a beam or bar, pivoted at its ends to opposite bars of the frame A. The beam C is free to swing round its pivots, and can be locked in any desired position, by means of a pin or screw, *d*, which is fitted through a semicircular or other plate, *e*, projecting from the frame, and through or into an arm, *f*, projecting from the beam C, as indicated in fig. 3.

To this beam C is pivoted, by a pin, *g*, a vertical beam, D, near the upper end of which a horizontal cross-bar, E, is rigidly fastened, both parts, D and E, being rigidly braced, and connected by a diagonal beam, F.

This frame, D, E, and F, forms the real frame for holding the machinery connected with the drill, and is, around the axis of the beam C, as well as around its own pivot, *g*, adjustable, so that it can be turned in any suitable position. It can be locked, when its

position on the beam C has been determined, by means of a pin, *h*, which is fitted through the bar E or F, and into or through a perforated beam, G, which is pivoted to the beam C, as is clearly shown in figs. 1 and 2.

In figs. 1 and 2, the frame D E F is shown in different positions, its post D, being, in fig. 1, vertical, or nearly so, while it is inclined in fig. 2.

In the post D are the bearings for a horizontal arbor, H, on which a winged wheel, I, and a crank or driving-wheel, *i*, are mounted.

J is a lever, pivoted by a pin, *j*, to the beam E, its outer end having a pin, K, which rests on a powerful spring, L, while its inner end rests on a shoulder formed on a bar, M, that rests alongside of the beam D.

From the bar M projects a pin or roller, *l*, which supports it on the inclined beam F.

Another pin or roller, *m*, projecting from M, is caught by the arms or wings of the rotating wheel I, and thus the bar M is raised by the wings of I.

When the bar M is raised, it also raises the inner end of the lever J, and depresses the outer end of the same, which forces the end of the spring L down, as indicated in fig. 1, in which the parts are shown in the position which is obtained when one wing, I, has nearly or quite pushed up and sideways the beam M. As soon as the wing leaves the pin *m*, the spring L commences to act, and suddenly forces the parts J and M back into their original positions that are shown in fig. 2.

N represents the rod or shaft, to the lower end of which the drill is secured. This rod is guided in suitable eyes or boxes projecting from the face of the beam D, and has a crank, *n*, projecting from its upper end, through a slot in the inner end of lever J. The oscillating motion, imparted to the lever J will thus serve to move the drill, which will be gradually raised by the action of the wheel I, and then suddenly forced down by the spring L.

Owing to the S-shaped wings of the wheel I, and owing to the inclined track F, on which the pin *l* rolls, the bar M will also, when raised by the wheel I with its lower end, be moved laterally away from the beam D, as indicated in fig. 1. By this side motion it draws a toothed bar, *o*, which rests on the face of D, back and forth, the said bar *o* having a pin, which fits through a slot in M, as shown.

p is a pinion, or rather a ratchet-wheel, fitted around a polygonal portion of the shaft N, so as to allow the said shaft to move up and down without affecting the position of *p*, while neither can turn without the other. The pinion *p* is held between lugs *r r*, that project from D as shown.

When the bar M is being raised and pushed away from D, by the action of the wheel I, it draws the bar *o* in a horizontal direction toward it, and when the bar *o* is thus moved, its teeth mesh into those of the

ratchet-wheel *p*, and it therefore imparts intermittent rotary motion to the wheel *p*, and with it to the rod *N*, while the latter is being elevated.

By a spring or pawl, *S*, the wheel *p* is locked, so that it cannot be turned back when *o* is pushed back by the bar *M*.

In this machine, therefore, the drill can be brought into any desired position on all kinds of ground, and will receive combined reciprocating and intermittent rotary motion.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. The frame *C D E F* of a rock-drilling machine, when such frame is made adjustable around the axis of the beam *C*, and around the pivot *g*, substantially as herein shown and described.

2. The legs *B*, pivoted by the pin *b* to the side of the frame *A*, the outer end of said pin having an eye,

a, in which the legs are adjusted vertically, as herein described for the purpose specified.

3. The combination of the winged wheel *I* with the up-and-down as well as with the laterally-movable bar *M*, from which latter the pins *l* and *m* project as set forth.

4. The up-and-down as well as the sideways-moving bar *M*, in combination with the lever *J*, spring *L*, rod *N*, rack *o*, and ratchet-wheel *p*, all made and operating substantially as herein shown and described.

5. Imparting an intermittent rotary motion to the drill-shaft *N*, by means of the sliding pinion *p*, horizontal rack *o*, and vibrating bar *M*, arranged and operating as herein shown and described.

ROBERT GIDLY.

Witnesses:

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