M. T. Rowland's

Stone Drill.

No. 17,896. Patented July 28, 1857.

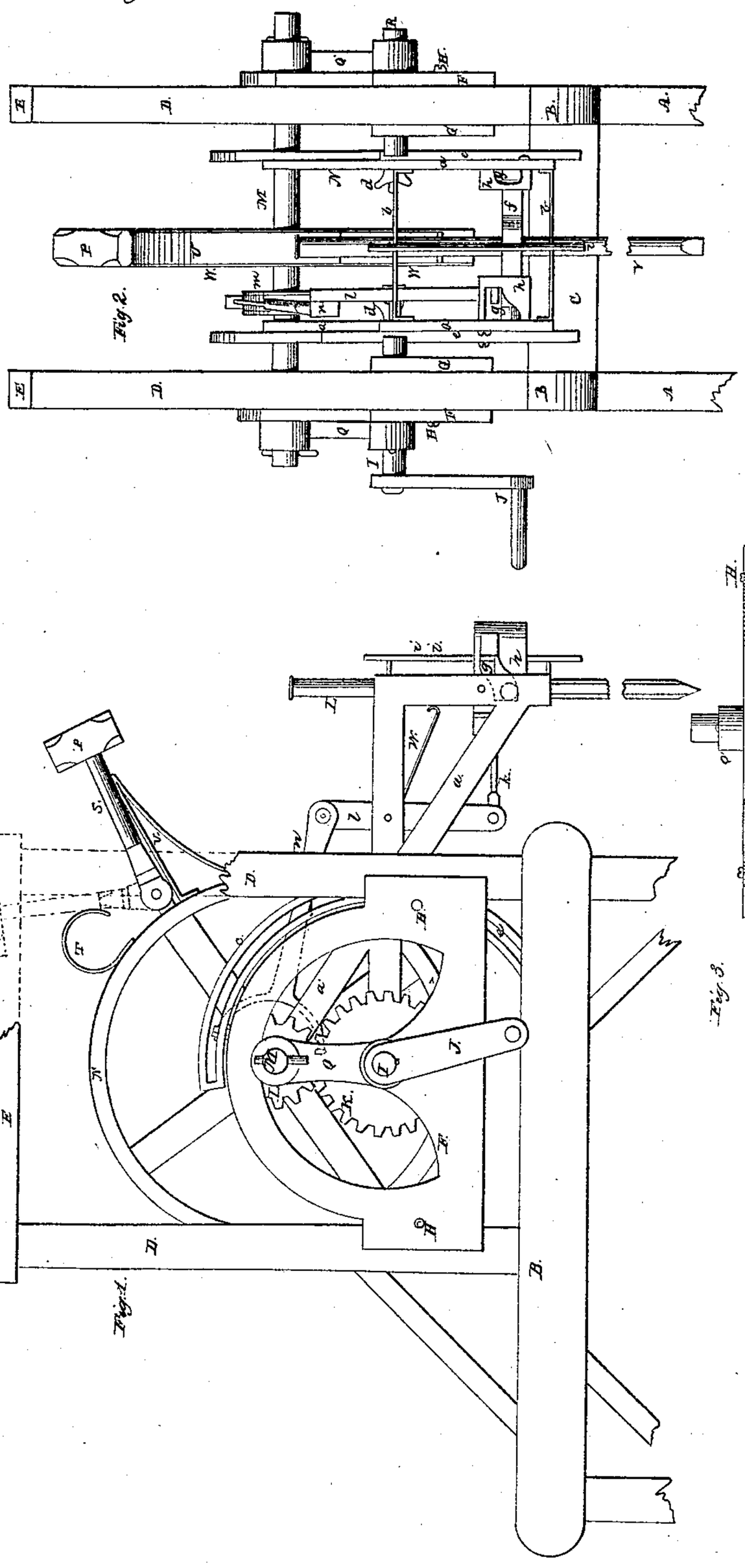

Fig. 2.

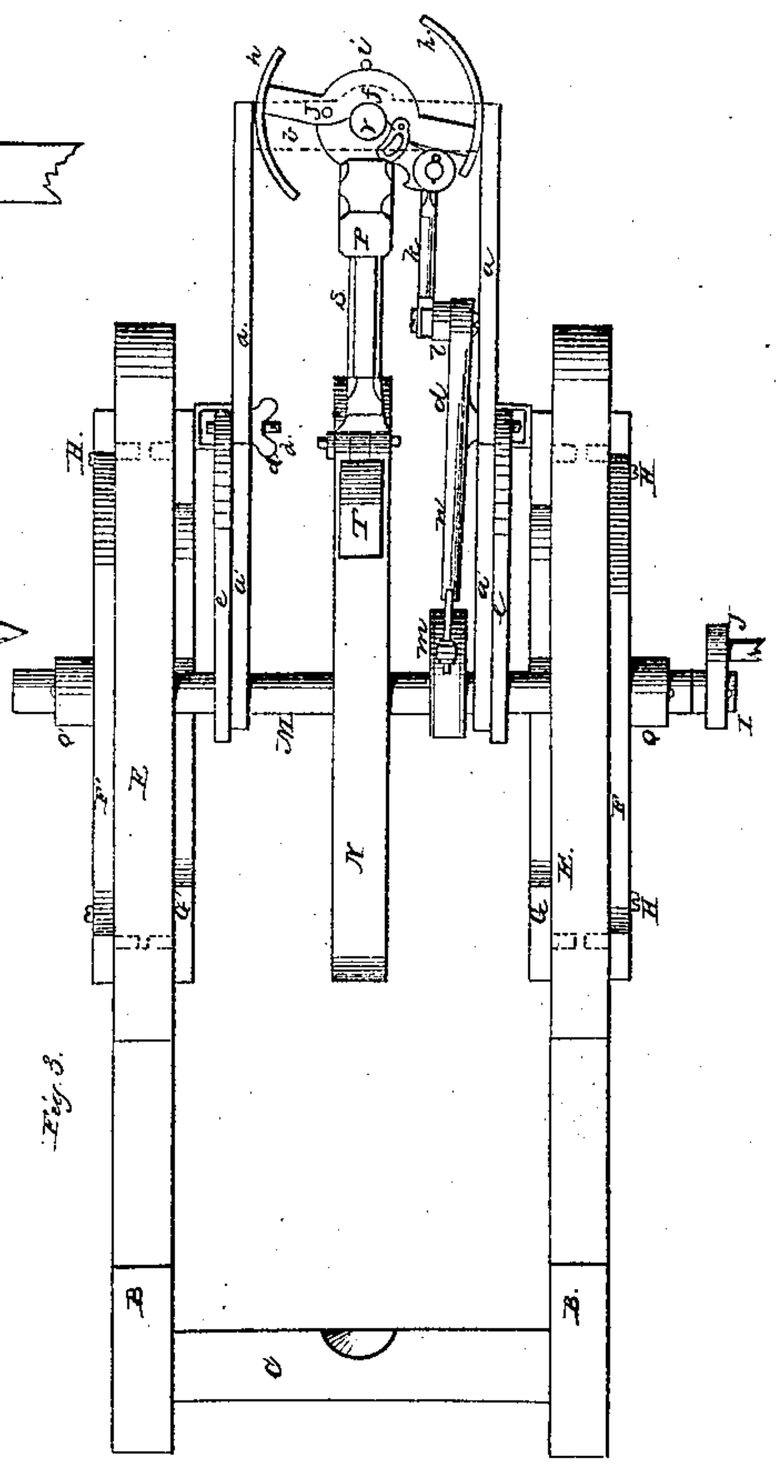

Fig. 3.

Fig. 1.

UNITED STATES PATENT OFFICE.

M. T. ROWLANDS, OF PITTSTON, PENNSYLVANIA.

MACHINE FOR DRILLING ROCK.

Specification of Letters Patent No. 17,896, dated July 28, 1857.

To all whom it may concern:

Be it known that I, MOSES T. ROWLANDS, of Pittston, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Improvement in Machines for Drilling Rock; and I do hereby declare that the same is described and represented in the following specification and drawings.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, referring to the drawings in which the same letters indicate like parts in each of the figures.

Figure 1, is an elevation of one side of the machine. Fig. 2, is an elevation of one end. Fig. 3, is a plan or top view.

The nature of my invention consists in certain improvements in rock drilling machines, which will hereafter be more fully described.

In the accompanying drawings a vibrating centrifugal hammer is represented as applied to a drill for boring rocks.

A, A, are standards supporting the bars B, B, which bars are connected together by the cross bar C, as shown in the drawing. The posts D, D, are fastened to the bars B, B, and connected at the top by the bars E, E; the whole forming a strong frame, to support the other parts of the machine; which frame may be braced as shown in the drawing or otherwise.

F, F′, are two metal side plates consisting of a bar and arch as shown in Fig. 1, the bar being provided with a flange near each end to fit against the insides of the posts D, D. The plates F, F′, are connected to two similar plates G, G′, by the screws H, H, by which they are drawn toward one another so as to clamp the posts D, D, and hold the plates at such height upon the posts as may be desirable.

I, is a shaft arranged to turn in the plates F, and G, and may be operated by the crank J, or a pulley or gear may be applied to the shaft to operate it by such power as may be provided for that purpose. The gear K, is fastened to the shaft I, and drives the gear L, and shaft M, which carries the wheel N, to operate the hammer P. The shaft M, turns in the links Q, Q′, one of which connects it to the shaft I, and the other to the rod R, in the plates F′, and G′, opposite to the shaft I. The helve S, of the hammer P, is hinged to the periphery of the wheel N, as shown in the drawing, so as to vibrate in the plane of the wheel's rotation, between the spring T, and stand U, both of which are fastened to the periphery of the wheel N. When the wheel N, is turned the hammer P, is thrown out by centrifugal force, so that its helve S, is radial to the shaft M, and as it is carried around it strikes the drill V, a blow; and as the wheel N rotates it draws the hammer from the top of the drill and swings it out so as to strike the drill every time the shaft is turned. If the drill V, is drawn back in turning or recoils from the stone the spring W, is fastened to the periphery of the wheel N, and arranged so as to strike the drill and force it against the stone, and leave it in contact with the stone, for the hammer to strike as it follows the spring.

The frame to hold the drill consists of the two sides *a*, *a*, made in the form shown in the drawing and connected together by the bars *b*, *b*, through which the drill traverses and by which it is supported in the position desired to drill the hole in the direction required. This frame is arranged to swing on the end of the shaft I, and rod R, and may be adjusted, so as to hold the drill at such an angle, or in such a position as may be required and fastened by the bolts *d*, *d*, which pass through the sides *a*, *a*, and semicircles *e*, *e*, for that purpose. The semicircles *e*, *e*, are fastened to the plates G and G′ so as to be moved up and down with and by the plates. The upper arms *a*′, *a*′, of the sides *a*, *a*, are perforated and the shaft M, turns in them so that when the frame is moved to bring the drill to the angle required, the shaft M is moved also, to keep it in the same relative position to the drill; the links Q, Q′, being arranged to turn on the shaft I, and rod R, for that purpose. The drill V, is raised and turned by the clamp *f*, which vibrates around the drill V with its ends resting in the spiral slots *g*, *g*, in the pieces *h*, *h*, fastened to the sides *a*, *a*. The rod *i*, is fastened to the clamp *f*, to hold it in a proper position as it is vibrated, the rod *i*, traversing around the arcs on the bars *b*, *b*, shown in Fig. 2. This clamp *f*, is made in two parts hinged together by the pin *j;* one part is connected by the link *k*, to the lever *l*, which vibrates on a stud in the side *a*, and is operated by the cam *m*, on the shaft M, connected to the lever by the rod *n;* the cam operating the lever so as to close the clamp,

and grip the drill and turn it; the spiral slots *g*, *g*, inclining upward, so as to raise the clamp and draw the drill from the stone as it is turned. After the drill is turned the cam draws the clamp open, so as to release the drill and then vibrates it back down the spiral slots, ready to grip the drill again, after it has been struck by the hammer. The spring T, eases the helve of the hammer when the wheel is turned so slow as to let it fall back; and the stand U, prevents the hammer from falling forward much beyond a radial line under the same circumstances.

Although I have described but one hammer as being applied to the periphery of the wheel I contemplate that two or a series may be hinged to the wheel in a similar manner so as to strike one after the other in quick succession.

Although I have described the hammer minutely, I do not claim it as such in this application; but intend to make it the subject of a separate application, as applied to general purposes.

I believe I have described and represented my invention, so as to enable any person skilled in the art to make and use it. I will now state what I desire to secure by Letters Patent, to wit:

I claim—

The combination of the vibrating centrifugal hammer, with the rotating spring W, and loosely attached drill, V, arranged to operate in relation to each other, for the purpose of facilitating the drilling of rock as herein described.

MOSES T. ROWLANDS.

Witnesses:

J. DENNIS, Jr.,

JOHN S. HOLLINGSHEAD.