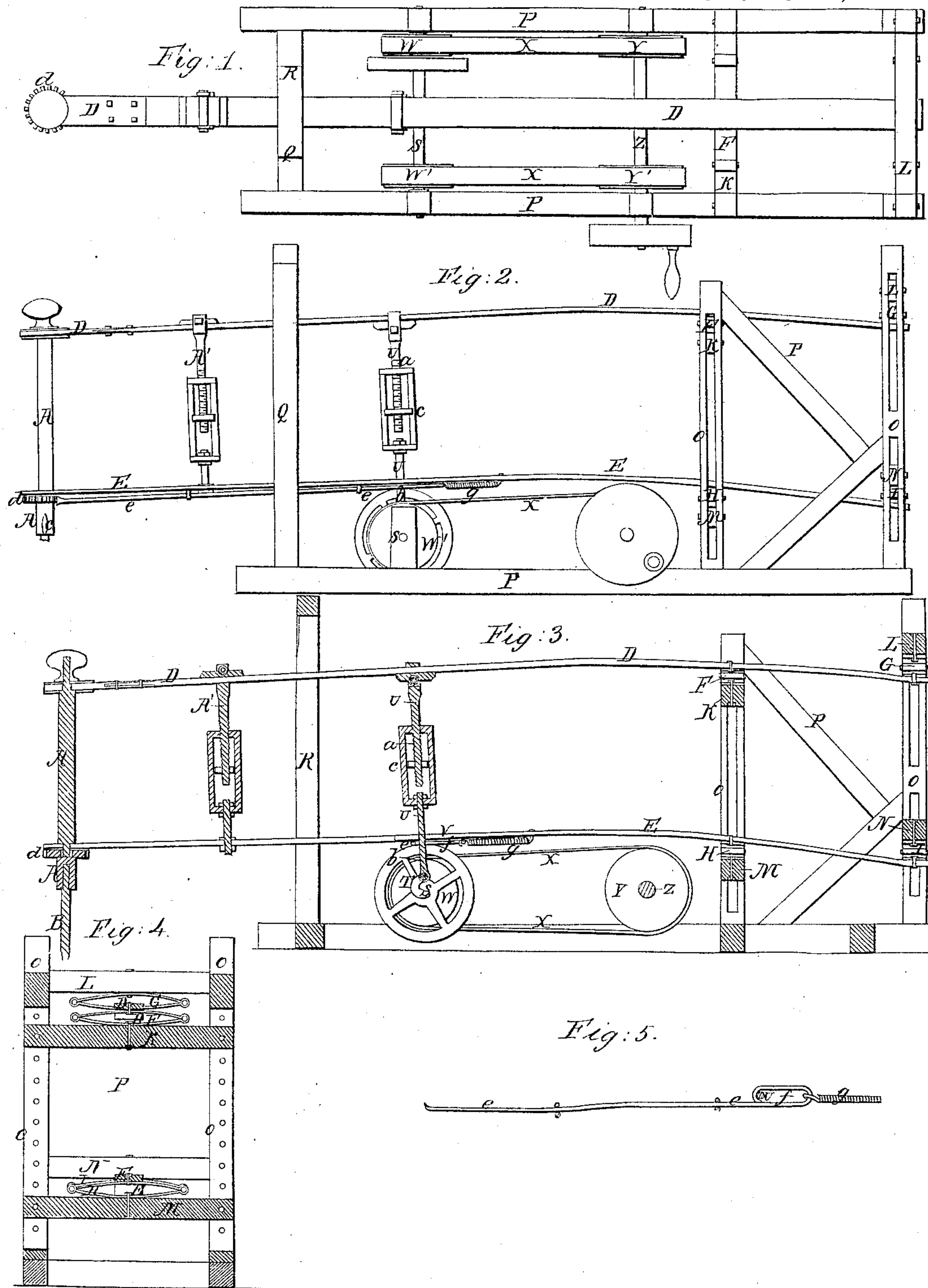


S. Jack,
Stone Drill,

N^o 6073.

Patented Jan. 30, 1849.



UNITED STATES PATENT OFFICE.

SAMUEL JACK, 2D, OF RICHMOND, MAINE.

COMBINED SPRING ROCK-DRILLING MACHINE.

Specification of Letters Patent No. 6,073, dated January 30, 1849.

To all whom it may concern:

Be it known that I, SAMUEL JACK, 2d, of Richmond, in the county of Lincoln and State of Maine, have invented a new and useful Improvement in Machinery for Drilling Holes in Rocks; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings Figure 1 denotes a top view of my improved drilling machine. Fig. 2 is a side elevation of it; Fig. 3, a vertical central and longitudinal section of it, and Fig. 4 a transverse and vertical section of it.

In the said drawings A denotes a vertical shaft or drill holder having a socket made in its lower end for the reception and retention of a drill B, which may be confined in place by a clamping screw C, or any other suitable contrivance. The said drill shaft or holder is supported by and at the front ends of two long parallel springs D, E, which are respectively sustained by two elliptic springs F, G, or H, I, arranged as seen in the drawings, there being one of said springs placed above each of the long springs and at its rear end, while the other of each two of said springs is placed underneath its long spring D or E, in the position as seen in the drawings. Each of the said elliptic springs is fastened to one of four transverse timbers or bars K, L, M, N, which are arranged and supported by four vertical posts O, O, &c., which make part of the frame work P, of the machine, said framework being constructed in any suitable manner. The front ends of the long springs D, E, play or move freely between two guide posts Q, R, of a vertical gallows frame.

A horizontal shaft S, disposed as seen in the drawings, has a bell crank T, to which the lower end of a connecting rod V is jointed, the said connecting rod being made to pass up through the lower spring E, or an elongated slot V made through the same. At the upper end of the said connecting rod it is jointed to the upper long spring D, and in such manner as to allow of the pendulous motion of the connecting rod, produced by the bell crank during the rotations of the shaft and crank. The said shaft may be put in revolution by any proper means. In the drawings it is represented as having two pulleys W, W', on it, around each of which

an endless band X, is made to work, and also to work on another pulley Y, or Y', fixed on a driving shaft Z.

The connecting rod U is made in two parts *a*, *b*, which are connected by a swivel *c*, the said swivel being jointed to the lower part *b*, and screwed upon the upper part *a*, the same being for the purpose of lengthening or shortening the rod, and thereby diminishing or increasing the downward pressure of the long springs on their elliptic springs. The said two long springs D, E, are connected together by another and similar connecting rod A', which is situated as seen in the drawings, and is jointed to each of the long springs, and so as to allow and cause them and the drill holder to simultaneously move up and down when the crank shaft is put in revolution.

The above constitutes the mechanism for sustaining the drill and imparting to it its reciprocating vertical movements. That which gives to it a horizontal rotation or movement on its vertical axis may be thus described.

On the drill holder A, a ratchet wheel *d* is fixed, just underneath the lower long spring E. A long rod, pawl or pitman *e*, shaped in top view as seen in Fig. 5 is so fixed to the underside of the lower long spring E, as to be capable of being moved longitudinally back and forth, while one end, with its end contiguous to the ratchet wheel, is made so to rest against the teeth of the said ratchet wheel, that when drawn backward it will slip over them, and when pushed forward will so act against them as to cause the wheel to be partially rotated.

The rear end of the rod or pawl is made with an eye *f*, and has one end of a spring *g*, attached to it, the other end of the said spring being affixed to the lower spring E, as seen in the drawing. The connecting rod U, passes through the eye *f*, the said eye being so made that when the connecting rod is moved forward or toward the drill, it shall be carried against the forward end of the eye, and made to crowd or move the rod or pawl forward, so as to create a partial rotation of the ratchet wheel and drill holder and drill. When a rearward movement of the connecting rod takes place the retractive power of the spring *g*, causes the rod or pawl to be drawn backward.

What I claim as my invention is—

The improvement or combination of

springs for supporting and operating the drill, the said combination consisting of the two long springs D, E, and the two elliptic springs of each long spring, one of the same being placed above its end, and the other below the said long spring as described, the said long springs being connected together and made to operate, and simultaneously raise or lower the drill essentially as above specified. I lay no claim to supporting a drill on or by a spring, or on or by a long bar or lever elevated by a cam or other proper contrivance, as I am aware or think that in all this there is no novelty, but I

rest my claim on the above specified combination of springs for working the drill, as by my combination I not only preserve the drill in a vertical line during its movements, but I avoid the disastrous effects which has been usually produced on the machinery by the percussion or the blow of the drill.

In testimony whereof I have hereto set my signature this seventeenth day of October, A. D. 1848.

SAMUEL JACK, 2d.

Witnesses:

EVA ABBOTT,

DANIEL CATE.