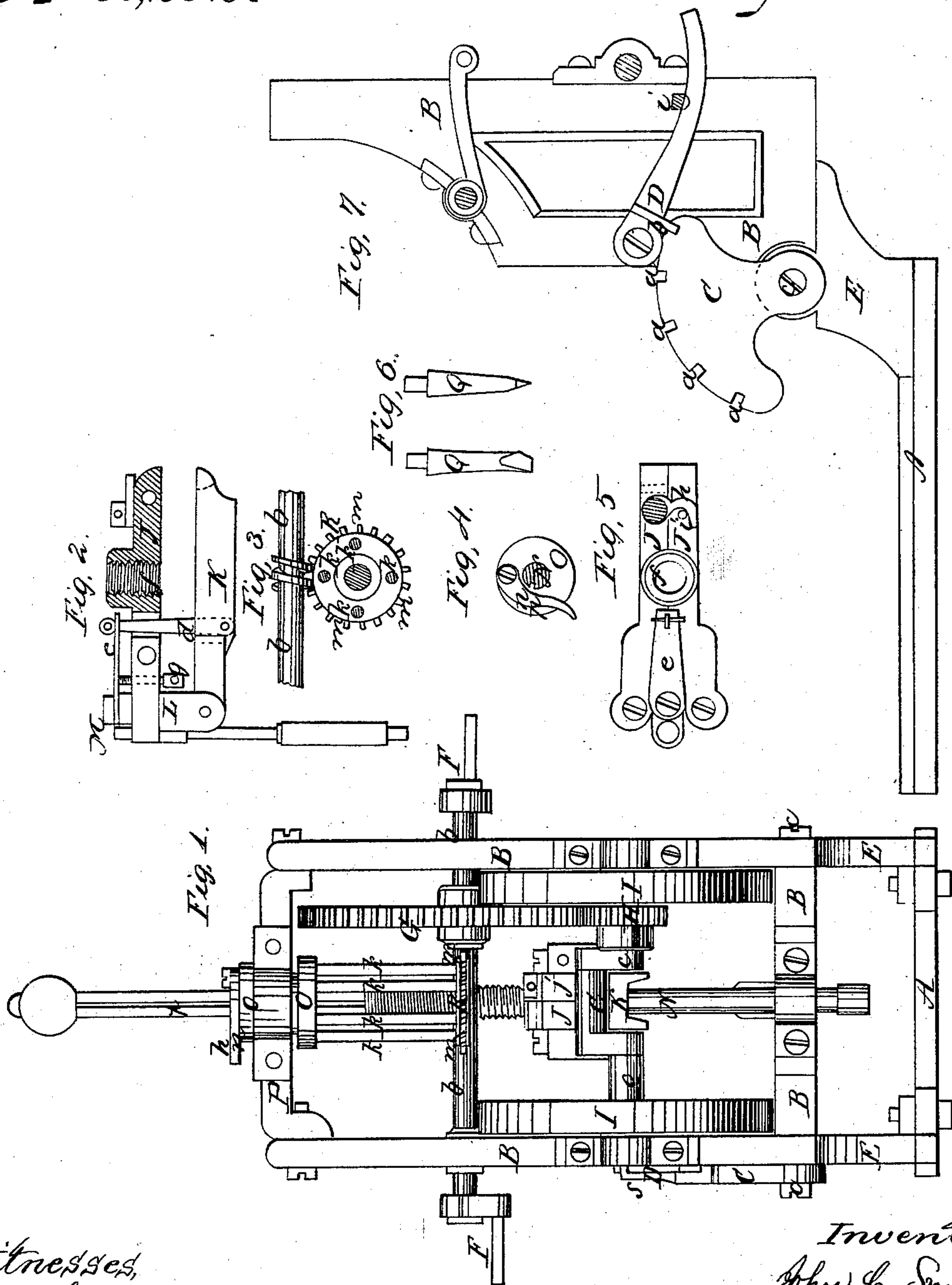


*J. C. Smith,*

*Rock Drilling Machine.*

*N<sup>o</sup> 80,232.*

*Patented July 21. 1868.*



*Witnesses,  
Leopold Kuntz  
W. A. Heathman.*

*Inventor,  
John C. Smith  
per  
Alexander Mason  
Att'y*



# United States Patent Office.

JOHN C. SMITH, OF TROY, NEW YORK.

*Letters Patent No. 80,232, dated July 21, 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, JOHN C. SMITH, of Troy, in the county of Rensselaer, and in the State of New York, have invented certain new and useful Improvements in Rock-Drilling Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the general arrangement of an adjustable self-feeding machine for drilling rocks.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a front elevation.

Figure 2, a side section of the jaws enclosing the drill-shaft.

Figure 3, a plan view of the self-feeding arrangement.

Figure 4, a plan view of the arrangement by which the drill-shaft is thrown in and out of gear with the self-feeding arrangement.

Figure 5, a plan view of the upper divided jaw enclosing the drill-shaft.

Figure 6 shows the drill-point, and

Figure 7 is a side elevation of the frame, showing the device for adjusting the same.

A represents a bottom or bed-piece, in the front end of which are two standards, E E, which extend forwards and support the frame B, when the same is placed in vertical position thereon.

The said frame B is pivoted to ears, on the rear corners of these standards, by means of screws *c c*, passing through said ears and through the lower rear corners of the frame.

One of the standards is also provided with a circular plate, C, extending upwards, which plate has a series of notches, *a a*, cut in its upper edge, into which notches the lug *s*, on the lower side of the lever D, fits. The said lever D being pivoted on the side of the frame B, and held firmly in place, when the lug is inserted into one of the notches, by means of a bevelled pin, *z*, also on the side of the frame, the said frame can, by this arrangement, be adjusted at any angle desired.

The shaft *b*, which is turned by means of the cranks F F, has its bearings in the sides of the frame B, and is provided, inside of said frame, with a driving-wheel, G.

Said driving-wheel works in the pinion H on the crank-shaft *c*, which also has its bearings in the frame B, below the former shaft, and is provided with two fly-wheels, I I.

The crank-shaft *c* works in between the jaws J and J' above it, and the jaw K below it, said jaws being joined at their rear ends to a head-piece, L, which moves up and down on an upright stationary rod, M, placed in the centre of the rear side of the bottom of the frame B, for the purpose of guiding said head-piece and jaws in their movement up and down, when moved by the crank-shaft.

The lower jaw, K, which is slotted to allow the drill-shaft to pass through it, is hinged or pivoted at its rear end to the lower side of the head-piece L, and is held up close to the crank-shaft by means of a bar, *d*, which bar is fastened to it, and passes up between the upper jaws J and J', being above the same, secured to a spring-plate, *e*, which is fastened to the upper side of the head-piece, and which can be regulated at will by means of a screw, *g*, passing up from beneath said head-piece, and striking the lower side of the spring.

The jaws J and J' are hinged or pivoted on the sides of the head-piece, and each provided with a half nut, and so arranged that, when closed together, they form a perfect nut, *f*, for the drill-shaft N to pass through, holding it at the same time firmly, as said drill-shaft is provided with screw-threads, which fit in the nut thus formed.

The jaws J and J' are held together firmly, when closed, by means of a hook, *h*, on one, and a pin, *z*, on the other, or by any other suitable device answering the same purpose.



The jaws are so arranged that the drill-shaft is placed near their centre, between the head-piece and the forward end of said jaws, where the crank-shaft moves.

The crank-shaft N passes through a flanged collar, O, in the cross-piece P, on the top of the frame B, and also through the bottom of the frame, at which end it is provided with a screw-nut for the insertion of the drill-point Q. This drill-point is bevelled, so as to form a sharp edge at its end, and one of the sides of said bevelled point, thus formed, is also bevelled off, as shown more plainly in fig. 6.

The flanged collar, through which the drill-shaft passes, is provided on its lower side, below the cross-bar P, with rods or bars *k k*, which extend downwards and connect with the wheel R, said wheel being placed around the drill-shaft, and is provided with pins or lugs *m m*, on the outside edge, which lugs are placed at such distance from each other that they will fit and work into screw-threads on the main driving-shaft *b*, as shown in fig. 3, thus turning the collar O.

The upper side of said collar, above the cross-bar P, is provided with a lever, *n*, which has a lug, *o*, on one side. This lug may be placed in a vertical groove, *p*, on the upper part of the drill-shaft, so that when the machine is in operation, and the collar O is turning, by inserting this lug into said groove, the drill-shaft obtains a rotary motion, as well as an up-and-down motion, and by means of the screw on the same, which fits into the nut *f*, already described, on the upper jaws, it becomes self-feeding, and gradually sinks lower into the rock.

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

1. The jaws J, J', and K, constructed as described, and joined to the head-piece L, in combination with the crank-shaft *c* and stationary rod M, for the purpose of giving an up-and-down motion to the drill-shaft N, substantially as and for the purposes herein set forth.

2. The wheel R, constructed as described, with lugs *m m*, working in the screw-threads on the shaft *b*, and connected by means of rods *k k* with the flanged collar O, in combination with the lever *h* and lug *o*, on said collar, and the groove *p*, on the drill-shaft N, for the purpose of giving said drill-shaft a rotary motion, substantially as and for the purposes herein set forth.

3. The arrangement of the driving-wheel G, pinion H, crank-shaft *c*, and fly-wheels I I, when constructed as described, and used, in combination with the jaws J, J', and K, for the purpose of giving motion to a drill-shaft, in drilling rock, substantially as herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand, this 12th day of June, 1868.

JOHN C. SMITH.

Witnesses:

WM. H. MASON,  
J. M. MASON.