

G. B. PHILLIPS.

Improvement in Machines for Drilling Rocks.

No. 131,559.

Patented Sep. 24, 1872.

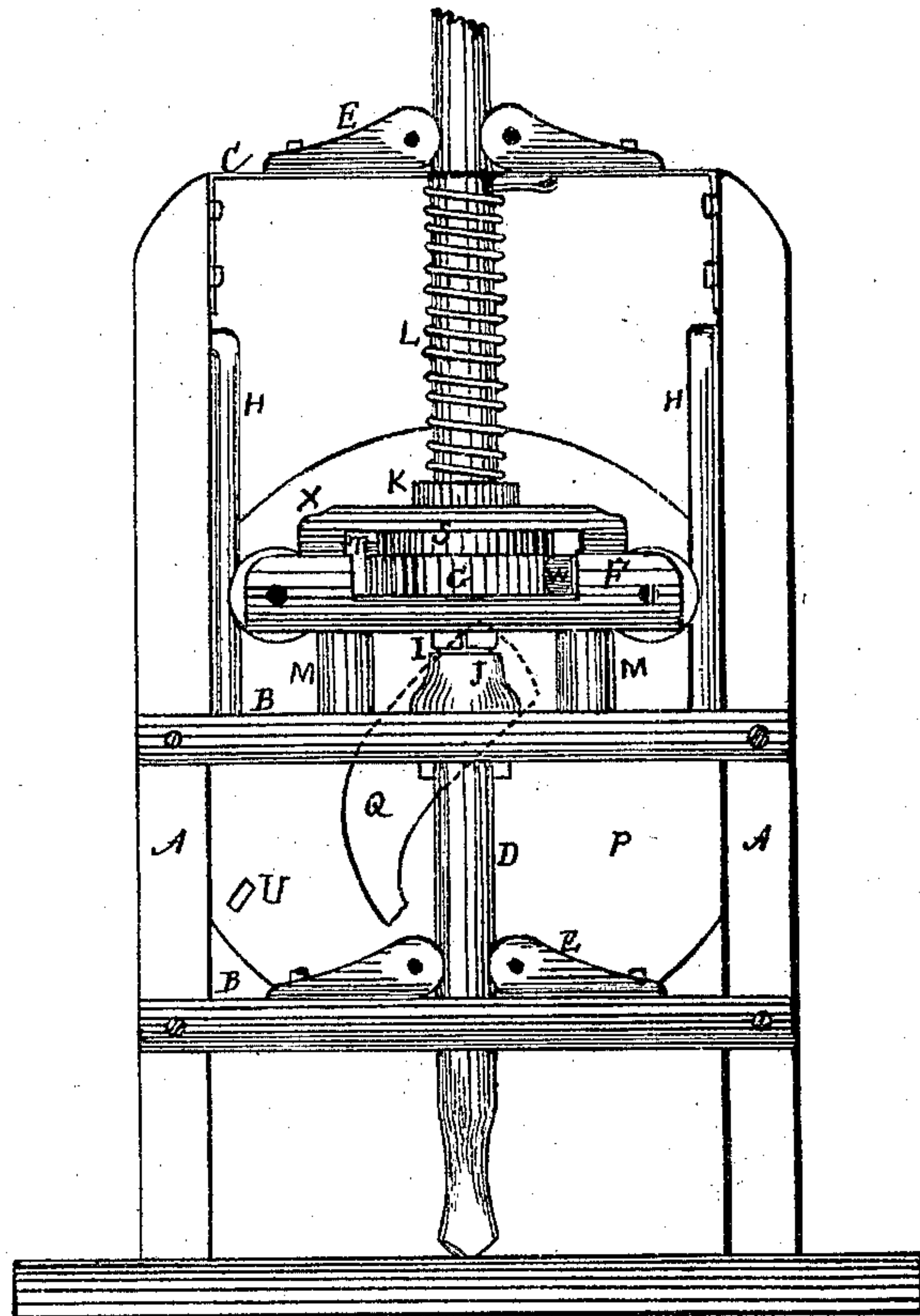


Fig. 1.

Fig. 3.

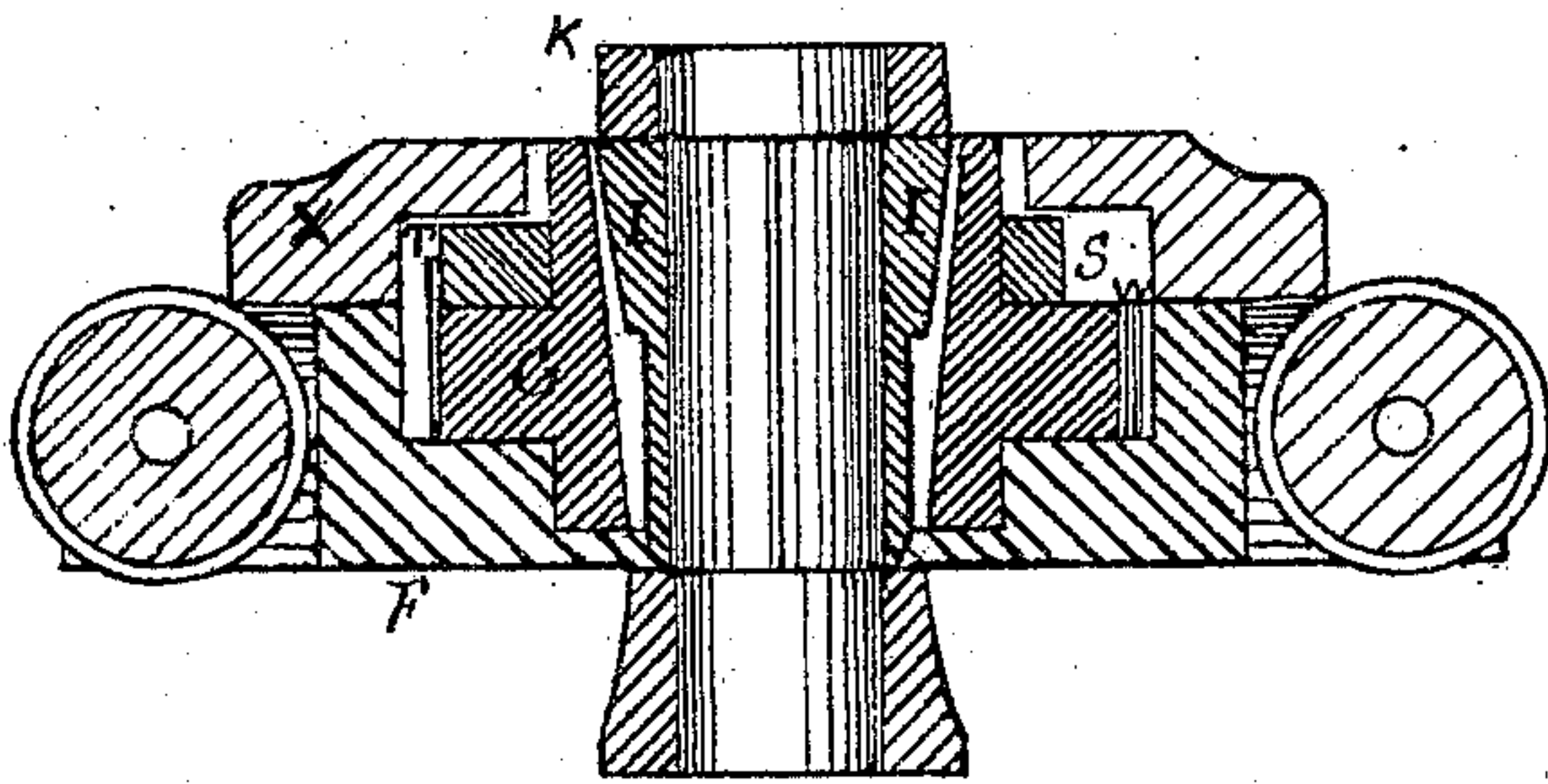
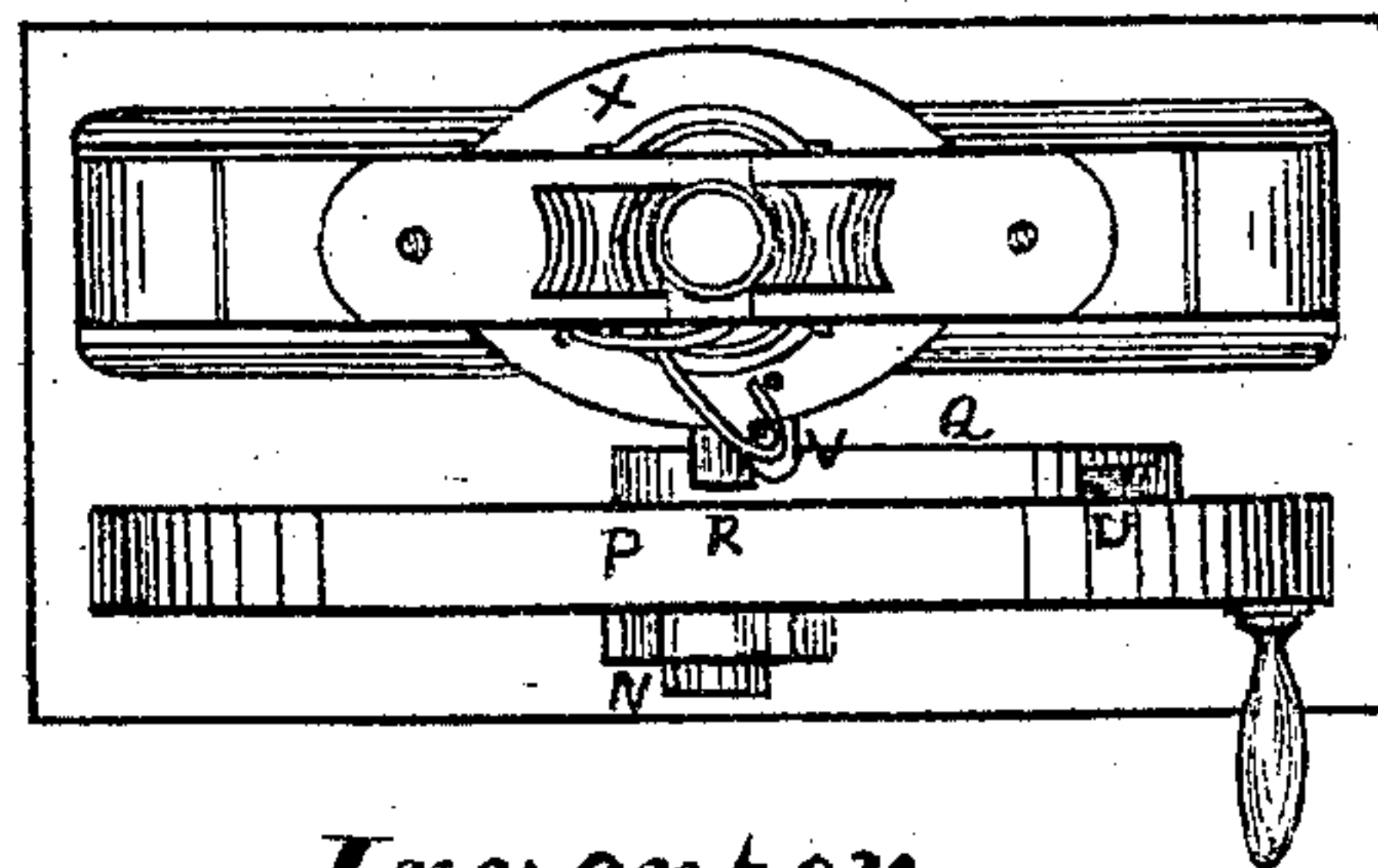


Fig. 2.



Witnesses,

W. R. O. del. m.  
W. A. Macy

Inventor.

George B. Phillips  
By his Atty. J. Dennis Jr



# UNITED STATES PATENT OFFICE.

GEORGE B. PHILLIPS, OF CLEVELAND, OHIO, ASSIGNOR TO HIMSELF AND  
JOHN N. WILLARD, OF SAME PLACE.

## IMPROVEMENT IN MACHINES FOR DRILLING ROCKS.

Specification forming part of Letters Patent No. 131,559, dated September 24, 1872.

*To all whom it may concern:*

Be it known that I, GEORGE B. PHILLIPS, of Cleveland, Cuyahoga county, in the State of Ohio, have invented certain new and useful Improvements in Lifting-Gripes for Rock Drilling and Channeling Machines; and I hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawing forming part of this specification.

The nature or essence of my invention consists in the new, useful, and improved devices for lifting and turning the drill which are described in the following specification and represented in the accompanying drawing.

In the accompanying drawing, Figure 1 is an elevation of a rock-drill with my improvements. Fig. 2 is a plan or top view of the same; and Fig. 3 is a section of the lifting block and gripe that lifts and turns the drill.

In the drawing, A A are the posts of the frame, which are connected by the bars B B firmly fastened to them, and by the top bar C, as shown in the drawing, each of which bars is perforated in the center for the drill-bar D to traverse in. The top bar C and the bottom bar B are provided with stands E, furnished with anti-friction rollers to facilitate the traversing of the drill-bar D. F is the lifting-block, provided with anti-friction rollers at the ends, which roll when the block is traversed on the ways H H fastened to the posts A A. The lifting-block F is countersunk or recessed on the upper side to receive the turning-block G, which block G has a conical hole in it, largest on the upper side, and is provided with a bushing, I, made in two parts. The outside of the bushing I is made conical to fit the hole in the block and the inside to fit the drill-bar D, so that when the lifting-block F is raised the bushing I slips down into the conical opening in the turning-block G and wedges or gripes the drill-bar D and lifts it up until the block is released, when it falls. When the block is released it descends with the drill until the lower end of the bushing I strikes the collar J on the upper bar B, which stops the bushing I, so that the turning-block G slips down on the bushing and releases the drill-bar D, and allows it to strike the rock with full

force and rebound or recoil without jarring the lifting devices or frame of the drill. The loose collar K is placed on the drill above the bushing I to press the bushing down and make it gripe the drill-bar; and a spring may be applied to press the bushing or collar down, if preferred that way. The spring L is arranged on the drill-bar, between the bar C and the collar K, to force down the lifting-block and drill-bar. To prevent the lifting-block from jarring the frame of the machine as it falls I fasten two blocks of rubber, M M, on the upper bar B to receive the lifting-block F when it descends. To raise the lifting-block and drill I fasten the stud N to the upper bar B for the pulley P to turn on, which may be turned by a band from some moving power. To the pulley is fastened the cam Q, which, as the pulley is turned, acts on the roller R, turning on a stud in the lifting-block F, and raises it to the extremity of the cam, and then lets it fall for the drill to strike a blow. The turning-block G is provided with ratchet-teeth on its periphery, and has the collar S turning loose on its upper portion, which collar has the spring-pawl T fastened to it, which acts on the teeth of the turning-block G when the collar S is turned by the pin U in the pulley P, acting against the arm V of the collar to turn the block G and drill. After the arm of the collar has been moved by the pin U it is carried back by one end of the spring L acting on a pin in the arm V. To prevent the block G from being turned back by the spring the spring-pawl W is fastened to the block F so as to catch the teeth of the block G and prevent it from being turned back. The perforated cap X is fastened to the block F to hold the collar S and turning-block G in place and allow them to turn freely.

When it is desirable to use a square drill-bar the inside of the divided bushing I may be made to fit the bar; and, if preferred, the outside of the bushing may be made square also, and tapering or wedge shaped, the hole in the turning-block G being made square and tapering to fit the bushing, which may be made in two or more pieces.

Having described my improvements in rock-drilling machines, I claim—

1. The combination and arrangement of the lifting-block F, turning-block G with a conical opening, divided conical or wedge-shaped bushing I I, and collar J, for the purpose of gripping and lifting and releasing the drill, substantially as described.

2. In combination with the lifting-block F and gripping mechanism, I claim the spring-pawl T and collar S with spring L and cam V,

operated by the pin U on the pulley, as and for the purpose described.

In testimony whereof I have hereunto signed my name.

GEO. BANGHART PHILLIPS.

Witnesses:

J. DENNIS, Jr.,

JOS. T. K. PLANT.