

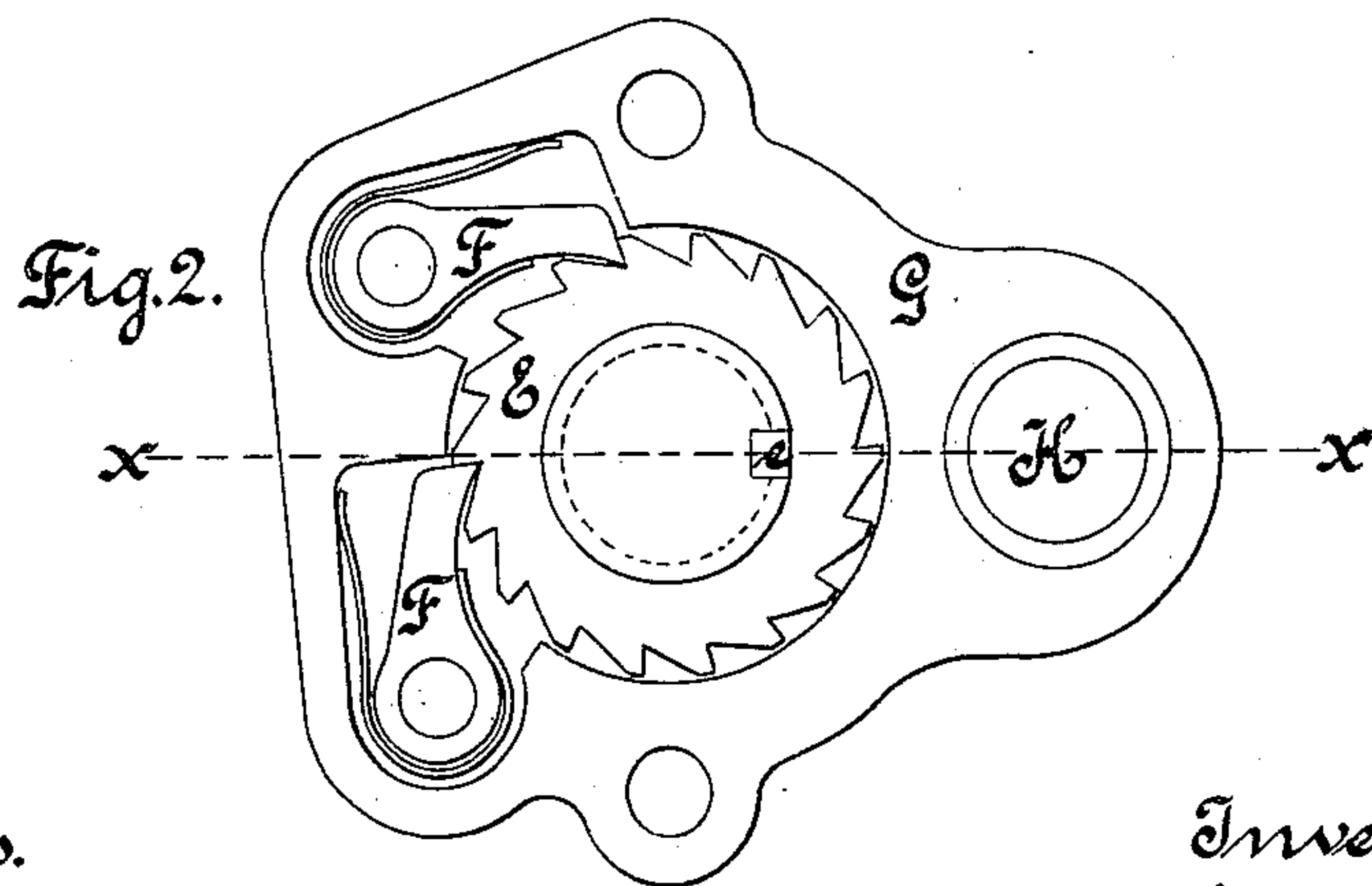
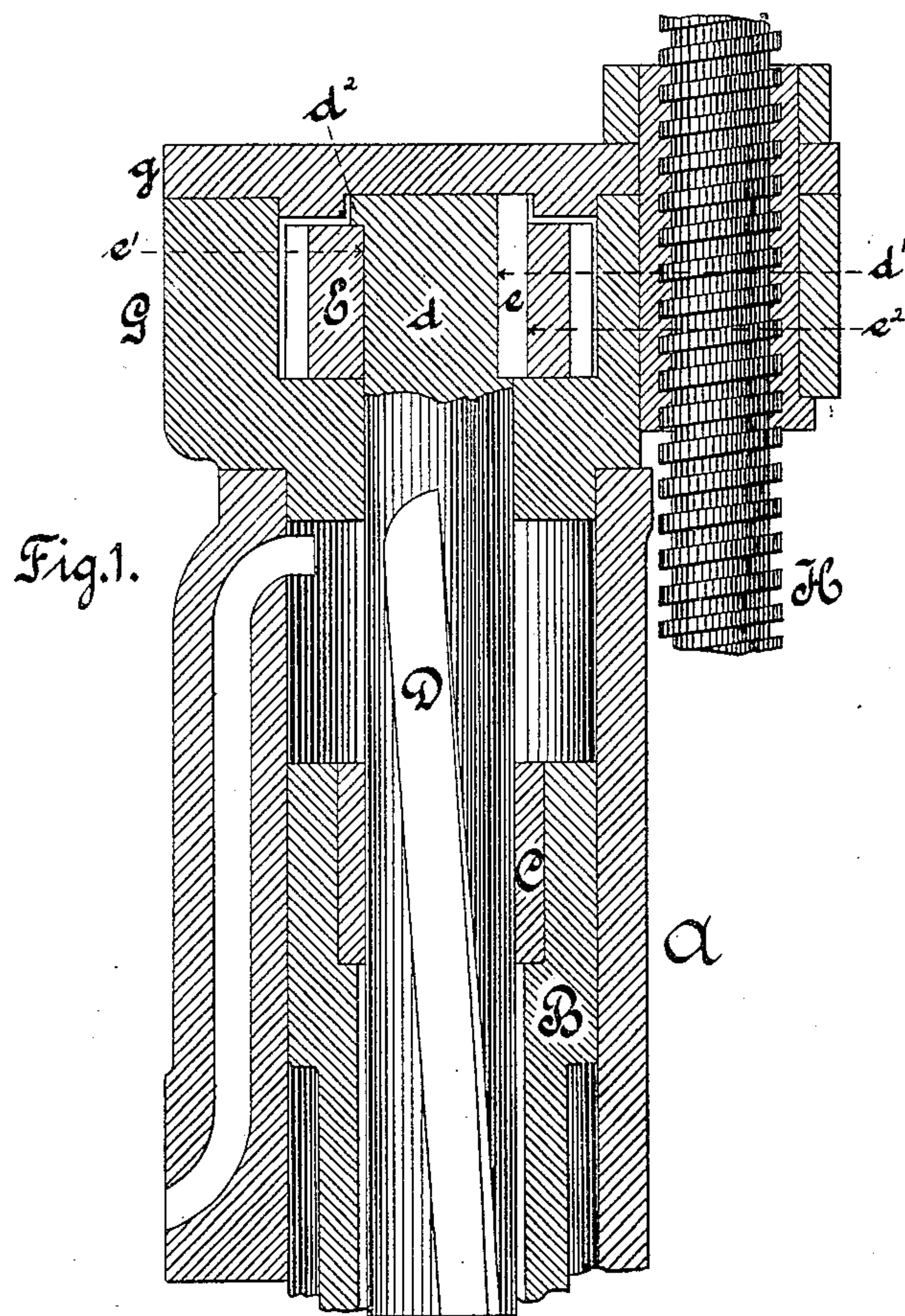
(No Model.)

J. C. GITHENS.

ROCK DRILL.

No. 246,947.

Patented Sept. 13, 1881.



Witnesses.

M. L. Adams.  
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# UNITED STATES PATENT OFFICE.

JOSEPH C. GITHENS, OF NEW YORK, N. Y., ASSIGNOR TO THE RAND DRILL COMPANY, OF SAME PLACE.

## ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 246,947, dated September 13, 1881.

Application filed July 16, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH C. GITHENS, of the city and State of New York, have invented a certain Improvement in Rock-Drills, of which  
5 the following is a specification.

My improvement relates to that class of rock-drills in which a spiral bar is employed to impart the rotating feed to the drill, and in which the backward rotation of the spiral bar is prevented by the engagement of detent-pawls with a ratchet-wheel applied to the upper end of the spiral bar.

As heretofore constructed the upper portion of the spiral bar is turned down and provided with a male screw-thread and inserted through the ratchet-wheel, and a nut is screwed onto it to hold the ratchet-wheel in place. In operation the constant jarring of the machine tends to loosen and unscrew this nut, and  
20 thereby let the spiral bar slip down into the cylinder.

It is the object of my invention to overcome this difficulty, and I accomplish this object by forming a laterally-projecting head upon  
25 the upper end of the spiral bar, and by boring a hole through the ratchet-wheel of the same diameter as the shank of the spiral bar. In assembling these parts in the machine the ratchet-wheel is placed in a chamber to the  
30 walls of which the detent-pawls are pivoted, and the shank of the spiral bar is dropped through the ratchet-wheel and through a suitable perforation in the chamber containing the ratchet-wheel, until the head of the spiral  
35 bar rests upon the ratchet-wheel. The ratchet-wheel is prevented from turning on the spiral bar by a key inserted in a key-seat formed partly in the ratchet-wheel and partly through the head and longitudinally along a portion  
40 of the shank of the spiral bar. A cap is then bolted to the ratchet-wheel chamber, and the result is that there can be no detachment of the ratchet-wheel from the spiral bar except by taking the machine apart.

45 The accompanying drawings, representing a portion of a rock-drill embodying my invention, are as follows:

Figure 1 is a central longitudinal section of the drill-cylinder, showing the piston, the

spiral bar, and the ratchet-wheel and the ratchet-wheel chamber. Fig. 2 is an end view of the ratchet-wheel chamber, with the cap or cover removed.

The drawings represent so much of a rock-drill as is necessary for the purpose of illustrating the manner of applying my improvement.

The steam-cylinder A is provided with the usual piston, B, containing at its upper end the nut C, which engages the spiral bar D.

60 The ratchet-wheel E is keyed fast to the spiral bar by the key *e*, and is prevented from turning, except in one direction, by the detent-pawls F F, pivoted to the walls of the ratchet-wheel chamber G. The ratchet-wheel  
65 has a hole, *e'*, bored centrally through it of the same diameter as that of the shank *d* of the spiral bar. The key *e* is seated partly in the key-seat *e<sup>2</sup>* in the ratchet-wheel and partly in the channel *d'* formed longitudinally in  
70 the spiral bar. The upper portion of the spiral bar, which projects through the ratchet-wheel, is enlarged to form the head *d<sup>2</sup>*, which bears upon the surface of the ratchet-wheel, and hence holds the spiral bar so that it cannot slip through the ratchet-wheel into the  
75 cylinder. The channel *d'* extends through the head *d<sup>2</sup>* to permit the insertion of the key *e*. A cap, *g*, is bolted to the ratchet-wheel chamber when the parts have been assembled,  
80 as shown.

The machine is provided with the usual longitudinal feed-screw, H, and the other usual appurtenances of a rock-drill.

The rotating feed of the drill is effected in  
85 the usual manner by the action of the spiral bar upon the nut C, screwed to the upper end of the piston, which causes the piston to rotate during its upward movement, because the detent-pawls prevent the spiral bar from  
90 backward rotation. During the downward movement of the piston the spiral bar is rotated in the direction in which it is free to move, and thereby is set in position to impart further rotation to the piston during its next  
95 upward movement.

I claim as my invention—

In a rock-drill, substantially such as de-

scribed, a spiral bar for imparting the rotating  
feed to the drill, laterally enlarged at its up-  
per end and thereby provided with a head,  
in combination with a ratchet-wheel through  
5 which the shank of the spiral bar is inserted  
and upon which the head of the bar bears,  
and a detent pawl or pawls pivoted to the

walls of the chamber or recess in which the  
ratchet-wheel is placed, substantially as and  
for the purpose set forth.

JOSEPH C. GITHENS.

Witnesses:

ASA FARR,

GRACE G. PIKE.