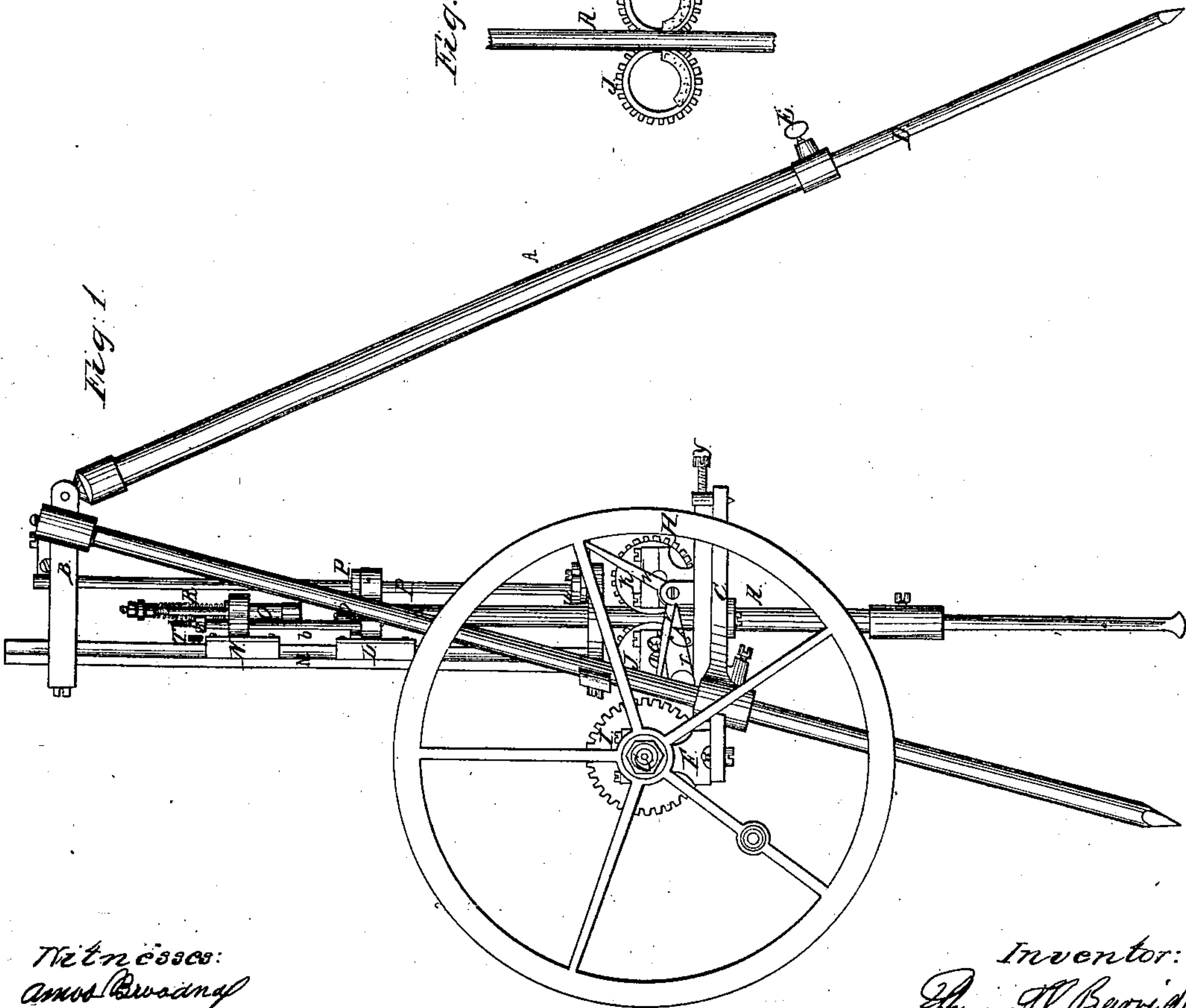
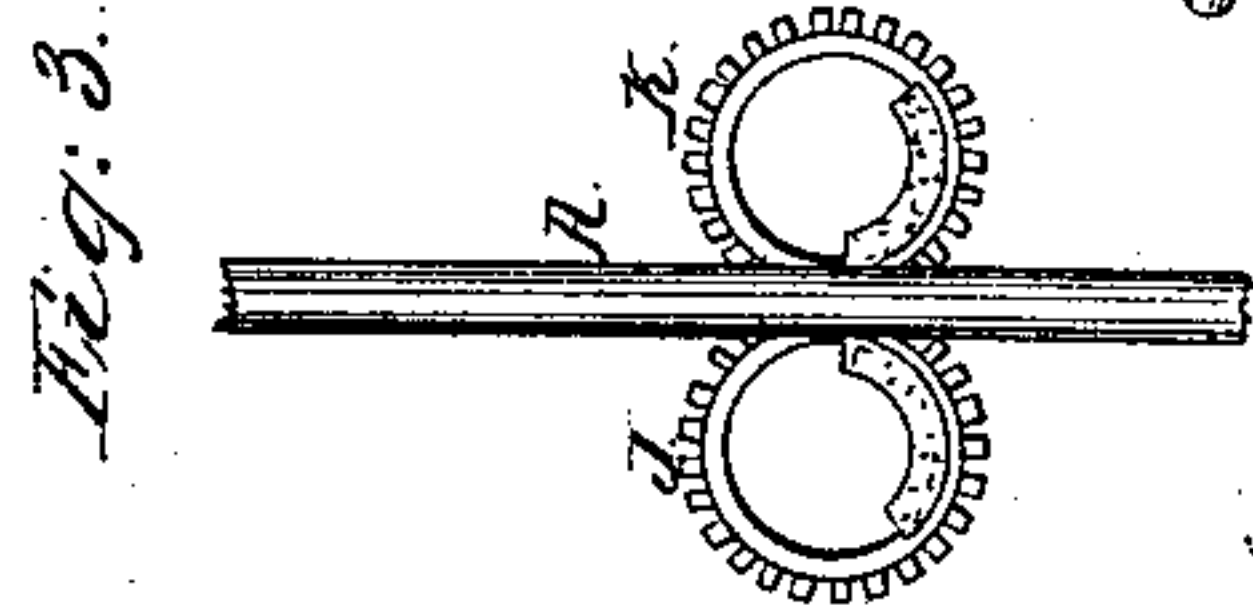
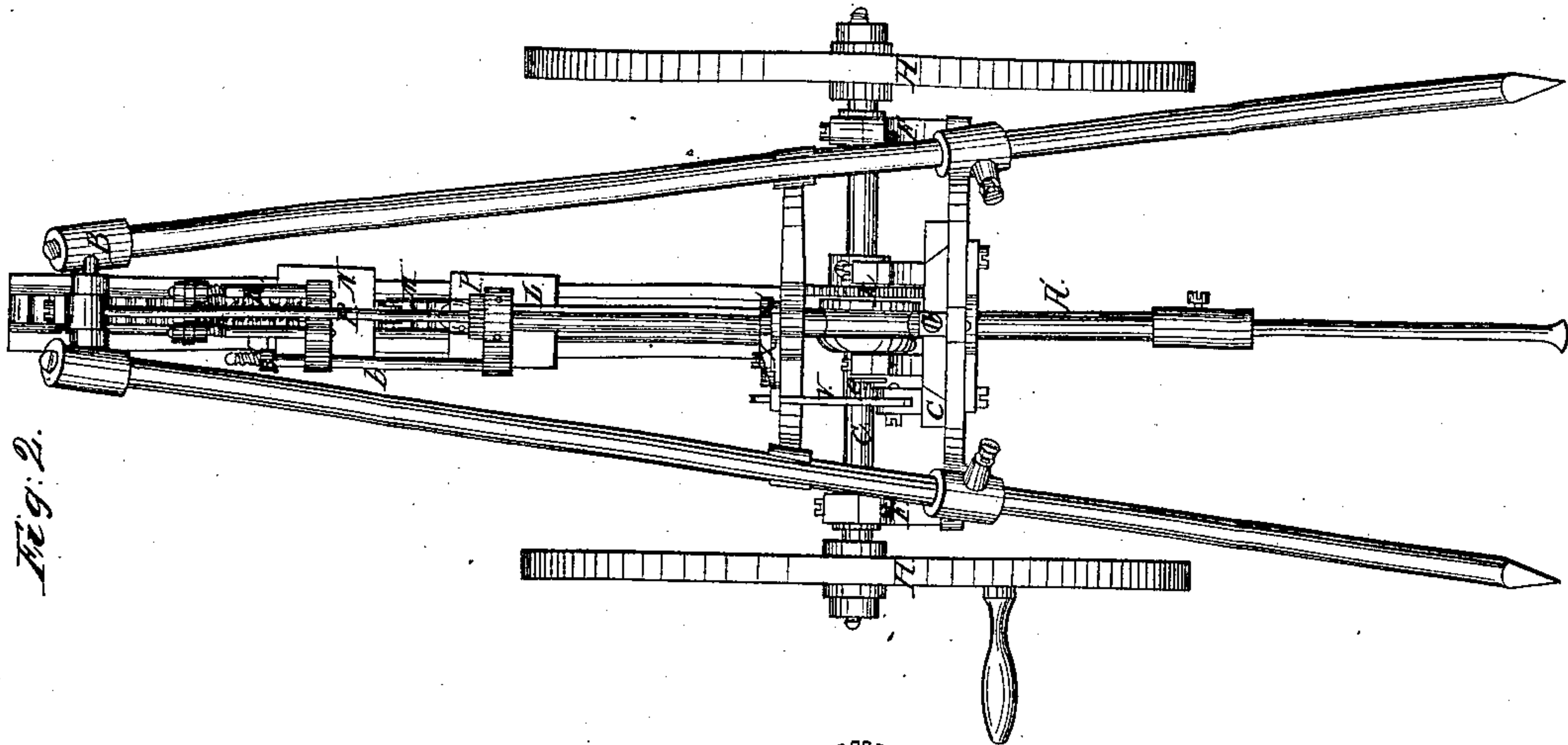


*T. H. Burridge,*

*Stone Drill.*

*N<sup>o</sup> 16787.*

*Patented Mar. 10, 1857.*



*Witnesses:*  
*Amos B. Wood*  
*J. H. Coe*

*Inventor:*  
*Thomas H. Burridge*



# UNITED STATES PATENT OFFICE.

THOMAS H. BURRIDGE, OF ST. LOUIS, MISSOURI.

## ROCK-DRILL.

Specification of Letters Patent No. 16,787, dated March 10, 1857.

*To all whom it may concern:*

Be it known that I, THOMAS H. BURRIDGE, of the city of St. Louis, in the State of Missouri, have invented a new and Improved  
5 Rock-Drilling Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

10 Figure 1 is a side elevation, and Fig. 2 a back view, with the leg A omitted.

The nature of my invention consists in a peculiar combination of mechanical devices hereinafter to be set forth; whereby an unlimited automatic feed and uniformity of  
15 impulse are effected: the details of construction and operation being as follows.

I first make a tripod of the ordinary construction, with two of the legs permanently  
20 secured in the frames B and C. The other leg is made adjustable by hanging it on a center at B so that it may be opened and shut, and by making it hollow and inserting the leg D, so that it may be made longer or  
25 shorter by means of the adjusting screw E.

On the frame C is secured the bearing blocks F F and in them is placed the driving shaft G, having the fly wheels H H upon it and also the cog wheel I, which meshes in  
30 the pinion J which again meshes in the corresponding pinion K. The pinions J and K have each a drum around their axis, which are made in halves and held together by screws. Around this drum and on the joint  
35 is cut a circular groove to correspond with the circumference of the drill bar. In the bottom of the circular grooves there are cut rectangular grooves, and in them are inserted pieces of india rubber which are allowed  
40 to project a little above the surface of the circular groove so as to form a cam on each drum. These cams being set directly opposite each other, strike the drill bar at the same time, and in revolving lift it, by the  
45 friction induced by the india rubber and the energy with which these cams act against the bar, is regulated by the adjusting screws y, which act on the slide rest in the frame c, and upon which the cam wheel bearings are  
50 fixed. The manner in which the india rubber is fixed in the drums so as to form the cams is shown at Fig. 3 and the relative position of the cams with the drill bar is also shown on the same figure.

55 L is a movable head which is carried up and down by the drill bar A', to which it is attached. There is a small cog wheel Q on

the head of the drill bar which meshes in a corresponding cog wheel P, connected with the head L so as to move up and down freely  
60 on the square rod P. On the lower end of this rod P is placed the ratchet wheel U which is acted upon by means of the pawl X—and the lever V V, to which is imparted a vibrating motion—by placing an ad-  
65 justable cam e on the axis of the pinion, J, so as to act on the lever; which is kept against the cam by the spring r. Now when the wheels are put in motion—the cam acts on the levers v and causes the drill bar A'  
70 to turn a given distance at each stroke.

The rod b is secured to the head L and works freely through the sliding head n so that the drill bar in descending brings the nut s in contact with the head N and  
75 forces it down just the distance the drill cuts in the rock, thus allowing the drill to feed itself and keep the end of the bumper O always the same distance from the top of the drill bar.  
80

The bumper O works freely through the head N and has a collar, around it above the head, upon which the spring R takes its bearing. The drill bar in rising strikes the  
85 end of the bumper O and compresses the spring R, by which the energy of the blow is regulated.

In the inside of the slide M is a ratchet, and to the head N is attached a spring which works in this ratchet, and prevents  
90 the head from rising when the drill bar strikes the bumper O.

I make the cog wheel I movable so that when it is desired to move the machine I bring it over on the fly wheel H H and  
95 throw the wheel I out of gear. The wheels H H now act as carriage wheels to transport the drill on.

The advantages of this construction are as follows. The drill receives an automatic  
100 feed, without limit, and is impelled by a constant force during the entire operation.

What I claim as new and desire to secure by Letters Patent, is—

The combination of the sliding head N, 105 with the ratchet guide piece M, bumper O, spring R, rod b and drill bar A'; when said parts are constructed and arranged for joint operation substantially as set forth.

THOMAS H. BURRIDGE.

Witnesses:

AMOS BROADNAX,  
R. H. COLE.