(No Model.)

J. F. ALLEN.

ROCK DRILL.

No. 267,127. Patented Nov. 7, 1882.

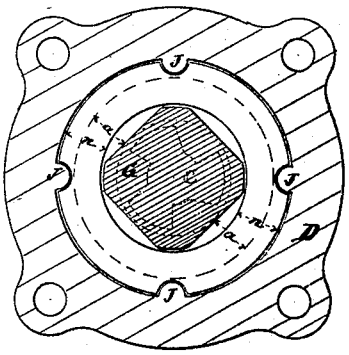

Fig. I.

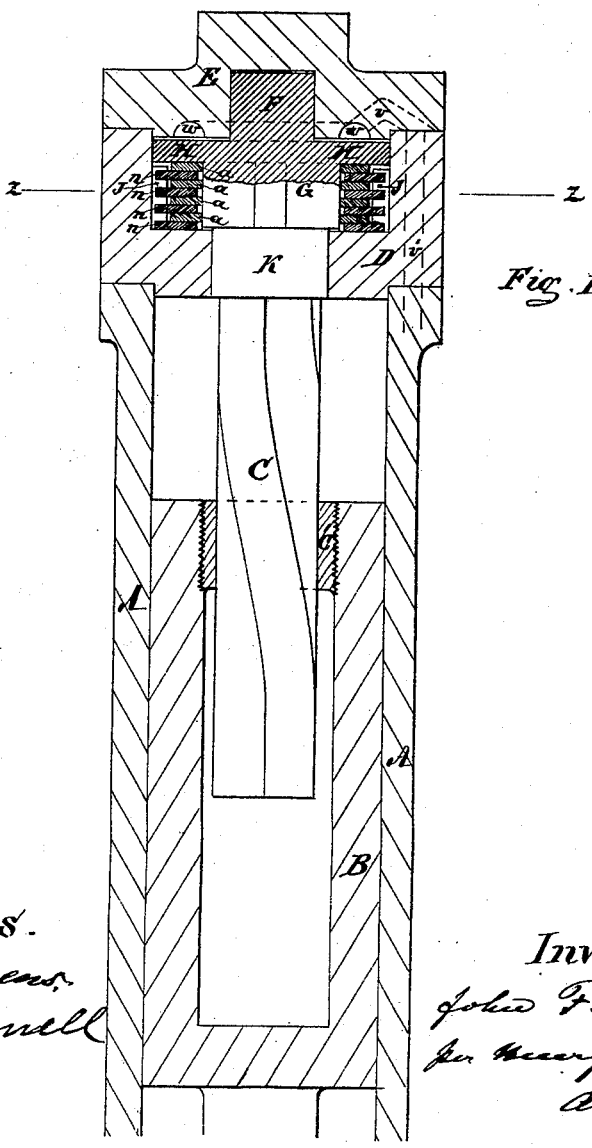

Fig. II.

Witnesses.
E. Lindgens.
Wm. H. Connell

Inventor.
John F. Allen
per Henry E. Raeder
Attorney.

UNITED STATES PATENT OFFICE.

JOHN F. ALLEN, OF BROOKLYN, NEW YORK.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 267,127, dated November 7, 1882.

Application filed February 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. ALLEN, of Brooklyn, in the State of New York, a citizen of the United States, have invented a new and useful Improvement in Rock-Drills, of which the following is a specification.

In rock-drilling machines the cylinder-piston, to which the drilling-tool is attached is after each stroke turned partly around. This operation is generally performed by means of a central bolt having inclined or twisted feathers or ribs on its circumference working into a corresponding nut attached into the piston, said bolt being held stationary when the piston moves in one direction, whereby said piston is forced to follow the inclination of the ribs on said bolt, and is consequently turned partly around, corresponding to the twist or inclination of the feathers, while when the piston moves in the opposite direction this bolt is let loose and free, whereby the piston moves in a straight line and causes the bolt to turn. This alternate operation of holding the bolt stationary and allowing the same to turn freely is generally produced by the arrangement of pawls acting against a serrated wheel firmly attached to the bolt.

My invention consists in the arrangement of a number of disks or plates alternately held stationary in a suitable case, and held fast on the bolt, and acted upon by a suitable collar or washer on said bolt, upon which the pressure of the cylinder operating the piston is made to act to press the several disks or plates together, whereby the friction produced between these several disks will prevent the disks attached to the bolt, and consequently the bolt, from turning, while as soon as the pressure is removed the bolt can turn freely around again.

In the accompanying drawings, Figure I represents a horizontal section at line *z z*, Fig. II, and Fig. II is a vertical section of part of a rock-drill with my improvement attached.

A represents part of a cylinder of a rock-drill; B, the piston working in the same, and C the bolt, having inclined or twisted feathers on its lower end, which projects into the cylinder and works in a corresponding nut, C′, fastened into the piston B.

D is a case forming the top or cover of the cylinder, and E the cover of the same. The bolt C, above the feathered part, is made circular at K, and fitted steam-tight into the lower part of the casing D. Above that part, at G, this bolt is made partly square, and above this is provided with a collar or flange, H, fitting tight in the enlarged part of the casing D, and its end F is centered or guided in the cover E.

In the inner periphery of the casing D projections J are provided, whereby disks or plates *n n*, placed loose into the case D, are held stationary. The central holes of these plates are made of sufficient size to allow the squared part G of the bolt C to turn freely in the same. Alternately between these disks *n n* disks *a a* are placed upon the squared part G of the bolt C, and of such a diameter as to be able to turn freely, with the bolt C, inside of the projections J. These disks *n* and *a* are made of any desired number, and of a thickness to fill the space between the bottom of the case D and the under side of the washer, flange, or collar H of the bolt C, which said collar H rests upon the top plate or disk and fits tight, capable of turning in the case D. The under side of the cover E is provided with a circular recess, *w*, connected through passages *v v′* with the cylinder A, below the bottom of the piston B, or with the passage-way leading to the lower part of the cylinder. When the pressure is upon the top of the piston B and the piston moves downward the lower end of the cylinder, and consequently the passages *v′ v* and recess *w*, are in connection with the exhaust, and no pressure will be exerted upon the collar H, and through the same upon the disks *n* and *a*, in consequence of which the disks *a a* and bolt C will be free to be turned around by the piston B, or by the nut C′, attached to the same. As soon as pressure is admitted below the piston B the same will likewise pass through the passages *v′ v* into the recess *w*, and will act upon the top of the collar H, forcing thereby the same tight upon the disks *n* and *a*, whereby friction between the several disks will be produced, and as one-half of said disks *a a* are fitted to the squared part G of the bolt C said bolt will be held stationary, and its lower feathered or ribbed part will cause the piston B to turn partially around the desired distance, corresponding with the inclination of the ribs or feathers. When it is desired to turn the pis-

ton B during its downward motion the inside of the case D is connected with the upper part of the cylinder, so that the pressure acting upon the piston B to move the same downward will act against the collar H and disks *n* and *a* to produce the desired friction between the disks, and thus hold the disks *a a*, and consequently the bolt C, stationary during that part of the movement of the piston B, in the manner above described.

Instead of making a flange or collar, H, on the bolt C to bear upon the series of disks, a washer fitting tight around the bolt C, and in the inside of the case D, may be arranged, similar to a piston, against which the pressure is made to act.

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

In a rock-drill provided with a central bolt connected to a suitable nut attached to the piston, or to the piston itself, for the purpose of turning said piston partly around when moving in one direction, a series of disks, *a a*, attached to the central bolt, C, in combination with alternate stationary disks, *n n*, and recess *w*, connected through suitable passages with the end of the cylinder of the rock-drill, arranged to operate in the manner and for the purpose substantially as herein described.

JOHN F. ALLEN.

Witnesses:
HENRY E. ROEDER,
J. B. NONES.