

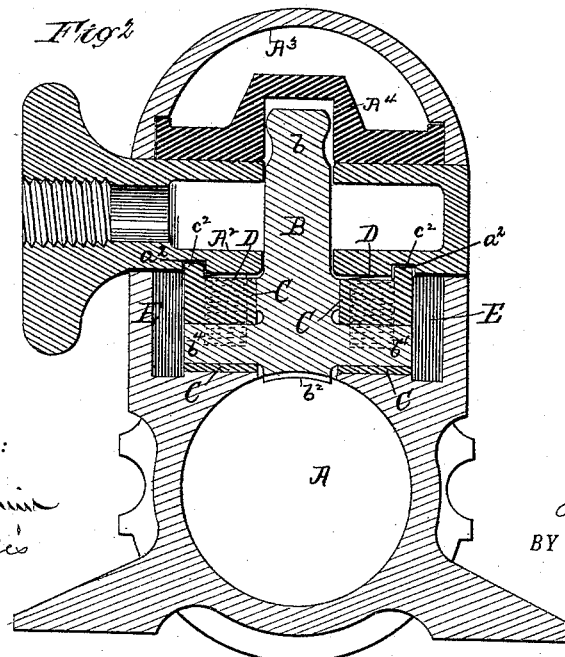
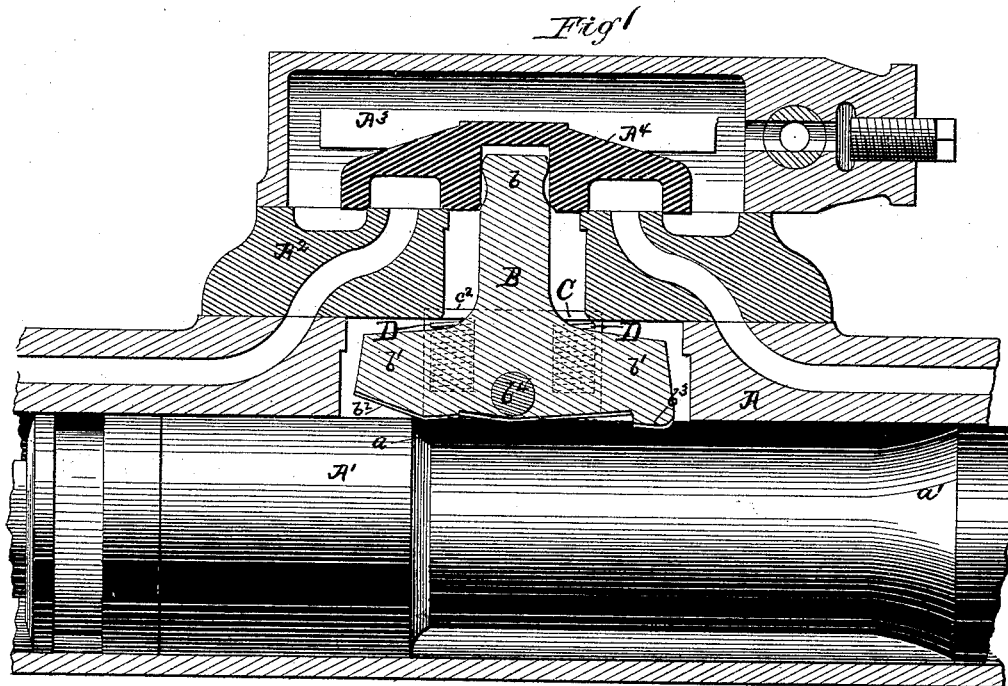
(No Model.)

2 Sheets—Sheet 1.

J. C. GITHENS.
ROCK DRILL.

No. 421,490.

Patented Feb. 18, 1890.



WITNESSES:

*Benjamin
J. Fales*

INVENTOR

Joseph C. Githens

BY

Arden S. Fitch

Attorney

(No Model.)

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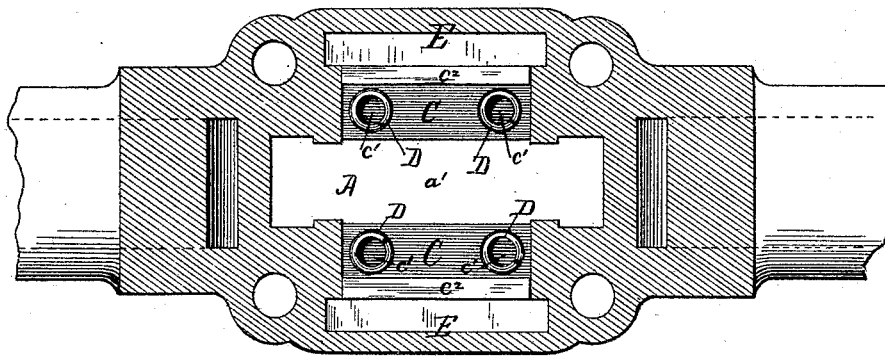


Fig. 3.

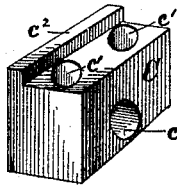


Fig. 4.

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UNITED STATES PATENT OFFICE.

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

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 421,490, dated February 18, 1890.

Application filed November 12, 1888. Renewed July 24, 1889. Serial No. 318,550. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. GITHENS, of the city, county, and State of New York, a citizen of the United States, have invented certain new and useful Improvements in Rock-Drills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to rock-drills, and more particularly to the means employed for pivoting the rocking lever which actuates the slide-valve; and my invention consists in the combination, with the cylinder, recessed, as hereinafter set forth, of the metal blocks, hereinafter specified, and seated in the cylinder-body, as described, in which blocks the rocking lever which actuates the slide-valve is pivoted, whereby the advantages herein-
after recited are attained.

Figure 1 is a vertical longitudinal section of the central portion of the cylinder and valve-chest of a rock-drill, and illustrating my improvement. Fig. 2 is a vertical lateral section of the same. Fig. 3 is a horizontal section in plan of the cylinder, the valve-chest and rocking lever being removed; and Fig. 4 is an elevation in perspective of my improved pivot-block detached.

A is the cylinder.

A' is the piston.

A² is the valve-chest with its bonnet A³, in which the slide-valve A⁴ works, as shown in Fig. 1.

B is the rocking lever which actuates the valve A⁴, an arm *b* thereof engaging said valve, as shown, and the arms *b'* thereof having, respectively, the inclined under faces *b*² and *b*³, adapted to engage the inclined faces *a* on the piston, which is recessed, as shown, for the purpose. The cylinder and valve-chest have the usual and necessary inlet and outlet ports and passages, as clearly illustrated in Fig. 1.

The parts and devices as thus shown and described are prevalent in rock-drills as now constructed, and I make no claim to novelty therefor herein. The operation of the said parts and devices is obvious and well known, and no detailed description thereof is necessary.

My present invention relates, as stated, to means for pivoting the rocking lever B; and it consists in the metal blocks C. These blocks may be made of steel, and are preferably rectangular, as shown. They are seated in corresponding recesses formed in the cylinder-wall immediately under the plate A² of the valve-chest, and one on each side of the opening *a'* in the cylinder-wall, in which the rocking lever B plays. The blocks are correspondingly bored through laterally, as shown at *c*, to receive the pivot-pin *b'* of the rocking lever and furnish a bearing therefor. The said blocks are given a yielding or spring-like seat in their respective recesses in the cylinder-wall in the direction between the bottoms of said recesses and the valve-chest plate A². For this purpose the blocks C are fitted somewhat loosely in said recesses, and they are preferably provided with spiral springs D, seated in suitable recesses *c'* in the blocks, and which springs thus have bearing against the under face of the valve-chest plate A². On the upper face of each block I preferably provide a longitudinally-extended lip or projection *c*², adapted to fit into a corresponding groove *a*² in the under face of the chest-plate A² and serving to prevent a lateral movement of the blocks in their seats.

Upon each side of the cylinder-wall beyond the block-recesses I preferably cast or form the bonnets E, as shown in Figs. 2 and 3, so that the seated blocks C are wholly inclosed within the cylinder-body, and at the same time the necessary access is afforded to the block-seats to enable them to be properly finished with suitable tools for the reception of the blocks.

The principal advantage attained by my described invention is that I am enabled to construct the blocks C so that they may be readily removed from their seats when the pivot-bearing *c* becomes worn and ineffective and others may be inserted in their place, the blocks being interchangeable in the several sizes of rock-drills. This interchangeability is secured by having the blocks a more or less loose fit in their recesses and by making them all of a less height than the depth to which the recesses for seating them are cut or formed in the cylinder-wall. In practice I

find it desirable to have the blocks about one-sixteenth of an inch less in height than the depth of the seating-recesses. This difference is taken up by the springs D bearing against the plate A².

Heretofore in pivoting the rocking levers B the pivot-pin has either had bearings in the wall of the cylinder or in blocks driven tightly into seats therein; but in such construction, when the bearings become worn in the former case, the cylinder has to be discarded entirely and a new one substituted, while in the latter case the blocks have to be forced out of their seats and new ones specially fitted to such seats then driven therein. It is evident that by means of the spring-seated blocks C, fitted loosely to their seats in the cylinder, the operator of the drill can at any time when the blocks, either or both, become disabled readily remove them and replace them by new ones which are interchangeable.

It is furthermore evident that by means of the bonnets E steam-tight joints around the blocks C at that portion of the cylinder-wall in which they are seated may be attained, thus preventing the objectionable escape of exhaust-steam around the pivot-pin of the rocking lever.

The employment of blocks seated in the cylinder-wall to serve as bearings for the pivot-pin of the rocking lever is desirable, for the reason that the pivotal point of the said lever may thus be carried nearer to the piston-surface than is practicable where the pivot-pin is given bearings in the cylinder-wall itself. By means of my described spring-seated blocks C this result may be attained, the bearings *c* being formed close to the base of the blocks, as shown, while the interchangeability of the blocks, as described, is not thereby interfered with.

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

1. In a rock-drill, the combination, with the cylinder, piston, and valve-chest, of spring-seated blocks in the recessed cylinder-wall, and the valve-rocking lever pivoted in said blocks, substantially as and for the purpose set forth.

2. In a rock-drill, the combination, with the cylinder, piston, and valve chest, of spring-seated blocks in the recessed cylinder-wall, and having on their upper faces projections adapted to fit into corresponding recesses in the valve-chest wall, together with the valve-rocking lever pivoted in said blocks, substantially as and for the purpose set forth.

3. In a rock-drill, the combination, with the cylinder, piston, and valve-chest, of the blocks C, seated loosely in corresponding recesses in the cylinder-wall and provided with springs D, seated in recesses in said blocks, and the valve-rocking lever pivoted in said blocks, substantially as and for the purpose set forth.

4. The metal block C, having the cylindrical lateral aperture *c*, the recesses *c'*, opening on its upper face, and the longitudinal lip *c''* on said upper face, together with the springs D, seated in and extending from said recesses, whereby said block is adapted to be interchangeably seated in the recessed cylinders of rock-drills immediately beneath the valve-chest thereof and to serve as bearing for a pivot-pin of the valve-rocking lever therein, as described.

5. In a rock-drill, the combination, with the cylinder, its piston and valve-chest, of spring-seated blocks C in the recessed cylinder-wall, constituting bearings for the pivot-pin of the valve-rocking lever, and the bonnets E on the cylinder-sides, inclosing said seated blocks, substantially as and for the purpose specified.

JOSEPH C. GITHENS.

Witnesses:

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