J. C. GITHENS.

Buffers for Steam Rock-Drills.

No. 166,273. Patented Aug. 3, 1875.

Fig. 1

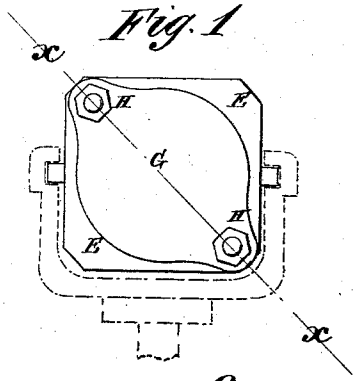
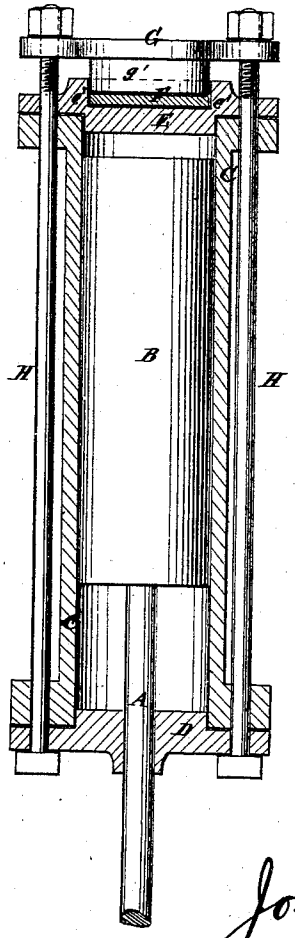


Fig. 2



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JOSEPH C. GITHENS, OF NEW YORK, N. Y.

IMPROVEMENT IN BUFFERS FOR STEAM ROCK-DRILLS.

Specification forming part of Letters Patent No. **166,273**, dated August 3, 1875; application filed Jnne 19, 1875.

To all whom it may concern:

Be it known that I, JOSEPH C. GITHENS, of the city, county, and State of New York, have invented a new and useful Improvement in Buffer for Steam Rock-Drills, of which the following is a specification:

Figure 1 is a top-end view of the steam-cylinder of a steam rock-drill to which my improvement has been applied. Fig. 2 is a longitudinal section of the same, taken through the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to relieve the heads of the steam-cylinder of a steam-drill from the liability of being broken by the blows of the piston as it works the drill.

The invention consists in the combination of the packing and the plate with the recessed head and the long bolts of the steam-cylinder of a rock-drill, as hereinafter fully described.

A is the piston-rod, to which the drill-bit is attached. B is the piston, and C is the steam-cylinder in which the piston B works. D is the lower cylinder-head, through which the piston-rod A plays; and E is the upper cylinder-head. In the upper or outer side of the upper head E is formed a recess, *e'*, in which is fitted a block, F, of rubber or other suitable material. G is a plate, upon the lower side of which is formed a projection, *g*, fitting into the recess *e'* of the head E, and resting upon the packing F. H are two long bolts, which pass through lugs upon the edges of the cylinder-heads D E and plate G, and have nuts screwed upon their ends.

By this construction, as the piston B in its upward movement strikes the upper head E it forces the said head upward against the packing F, and the blow is finally sustained by the long bolts H, which draw against the lower head D. As the piston B, in its downward movement, strikes against the lower head D, the said head moves downward a little, and, through the long bolts H, draws the plate G down upon the packing F, relieving the head E from the force of the blow. By this construction a single buffer at one end of the cylinder relieves the head from the force of the blows at both ends of the cylinder.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination of the packing F and the plate G *g'* with the recessed head E *e'* and the long bolts H of the steam-cylinder of a rock-drill, substantially as herein shown and described.

JOSEPH C. GITHENS.

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