

E. HUGHES.
Percussion Locks.

No. 44,630.

Patented Oct 11, 1864.

Fig 1.

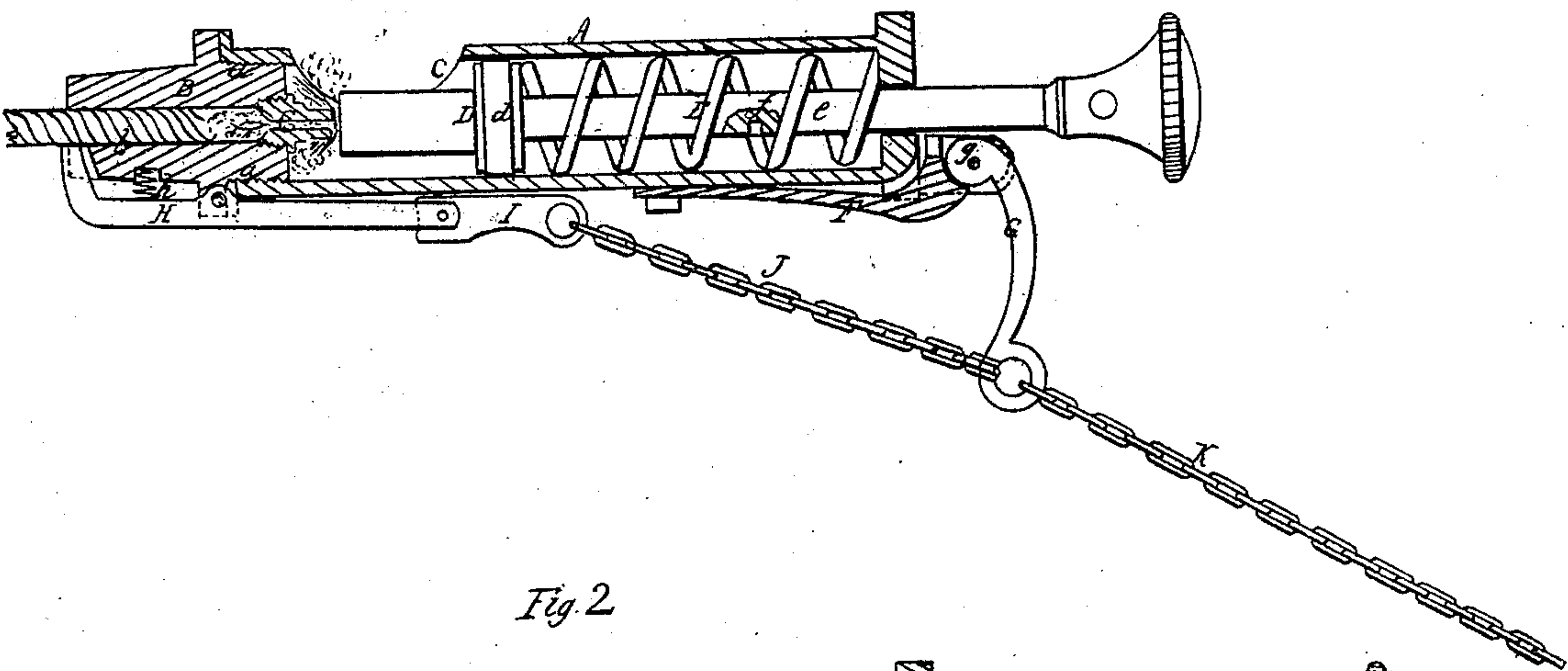
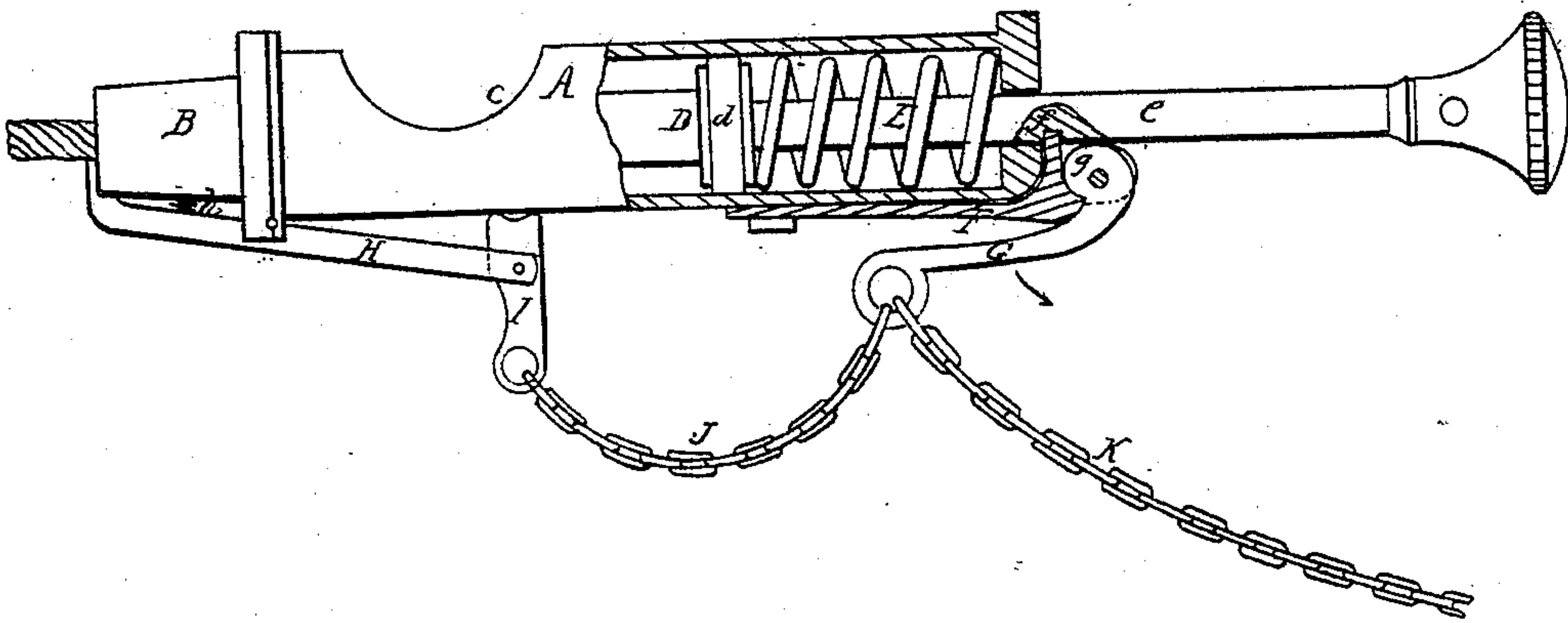


Fig 2.



Witnesses:

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E. HUGHES, OF McCARTYSVILLE, CALIFORNIA.

IMPROVEMENT IN PERCUSSION-LOCKS FOR DISCHARGING MINING-BLASTS.

Specification forming part of Letters Patent No. 44,630, dated October 11, 1864; antedated October 4, 1864.

To all whom it may concern:

Be it known that I, E. HUGHES, of McCartyville, in the county of Santa Clara and State of California, have invented a new and Improved Apparatus for Setting Blasts in Mines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of my invention in the act of the explosion. Fig. 2 is a sectional side elevation of the same when set.

Similar letters of reference in both views indicate corresponding parts.

The principal object of this invention is to enable miners in setting off blasts at the bottom of a shaft to get away before the explosion takes place, or, in other words, to enable a man engaged in blasting rocks to set off a blast from such a distance that he is perfectly safe from injury.

The invention consists in a barrel provided at one end with an opening to receive the end of the fuse, and with a spring catch or dog to hold the fuse in said opening, and furnished in its interior with a nipple and spring piston or hammer, said dog and hammer being provided with a prop and the other with a trigger, which are connected with each other by means of a chain or cord, in such a manner that, when the barrel is secured to a fuse by the dog and the hammer is set or cocked, by pulling a cord or chain connecting with the trigger the hammer is released and a percussion-cap placed on the nipple in the barrel is exploded, thereby setting fire to the fuse, and at the same time the dog releases the fuse and the barrel can be hauled in or up out of harm's way before the explosion takes place.

To enable others skilled in the art to make and use my invention, I will proceed to describe it.

A represents a barrel made of iron or any other suitable material, and with a bore of about three-quarters of an inch, more or less. It is provided with a screw-thread, *a*, at one end, to receive a short tube or tip, B, which is perforated with a central channel, *b*, just large enough to take the end of an ordinary fuse, such as used in setting off blasts.

C is a nipple, which is firmly secured in the inner end of the tip B, and which is intended to receive an ordinary percussion-cap. An aperture, *c*, in the side of the barrel A gives access to the nipple. The barrel A forms the guide for the hammer D, which is furnished with a cylindrical flange or piston, *d*, fitting nicely into the bore of the barrel. The stem *e* of said hammer extends through a hole in the top end or head of the barrel, and said stem and hole may be made square to prevent the hammer from turning. A spiral spring, E, which is placed between the flange *d* and the head of the barrel, acts on the hammer and causes the same to strike the percussion-cap on the nipple C with the necessary force to explode the same.

F is a spring-catch, which is secured to the outside of the barrel A, and which catches in a notch in the stem of the hammer whenever said hammer is drawn back far enough to bring the notch opposite the point of the spring-catch. In pulling the hammer back the spring E is compressed, and on disengaging the spring-catch F from the notch *f* the hammer is liberated and caused to descend with great force upon the nipple C. The spring-catch F is liberated by a trigger, G, which has its fulcrum on a pivot, *g*, which is fastened in two lugs or ears projecting from the head of the barrel. The end of this trigger forms a cam, which catches under a nose projecting from the outer end of the spring-catch, and when the hammer is cocked the relative position of the trigger and spring-catch is such as shown in Fig. 2 of the drawings. By pulling the trigger in the direction of the arrow marked near it in said figure, the spring-catch is liberated and the hammer descends. The fuse which is introduced into the tip B is held by a dog, H, which is set by turning a prop, I, up to a position at right angles with the barrel A, as shown in Fig. 2 of the drawings. This prop is hinged to the inner end of the shank of said dog, and when it is turned down in line with said shank a small spring, *h*, throws the front of the dog back, and the fuse is liberated. The prop I connects by a chain or cord, J, with the trigger G, and a chain or cord, K, serves to pull the trigger. The length of the chain J is so adjusted that when the trigger is pulled the prop I is turned down and the fuse liberated.

simultaneously with the descent of the hammer.

The operation is as follows: By pulling the hammer out far enough to allow the spring-catch F to drop into the notch *f*, said hammer is cocked, and a cap can now be put on the nipple C. The end of the fuse projecting from the blast-hole is then introduced into the hole in the tip, and by raising the prop I the dog H is caused to retain said fuse firmly in the tip. The apparatus is now ready to set off the blast, and the operator takes hold of the chain or cord K, which leads to the trigger, and after having gone to a safe distance he pulls said cord, and the hammer descends. By the explosion of the cap on the nipple fire is set to the fuse, and at the same time the dog H liberates said fuse, and the barrel A can be hauled in by the operator before the fire reaches the charge.

By the aid of this apparatus a blast may be set off at the bottom of a shaft without the least danger to the miner. After the cocking the hammer, placing a cap on the nipple, and fastening a fuse on the tip, he ascends, and by pulling the cord from the top of the shaft he can set fire to the fuse and haul in the appa-

ratus out of harm's way. At the same time a large saving in fuse can be effected, because only a short end is required, just long enough to fasten in the tip B.

My whole apparatus is very simple in its construction. It is light, cheap, and not liable to get out of order; and it will prove to be of the greatest convenience for miners particularly, and for all persons engaged in blasting rocks.

By a slight change my apparatus may also be used for submarine blasting.

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

1. The barrel A, provided with a hammer, D, tip B, nipple C, trigger G, and dog H, all constructed and operating in the manner and for the purpose substantially as herein shown and described.

2. The combination of the trigger G, catch F, and hammer D, with the prop I, dog H, and cord J', substantially as and for the purpose set forth.

E. HUGHES.

Witnesses:

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