

(No Model.)

A. WINDER.
BLASTING PLUG.

No. 378,820.

Patented Feb. 28, 1888.

Fig. 1.

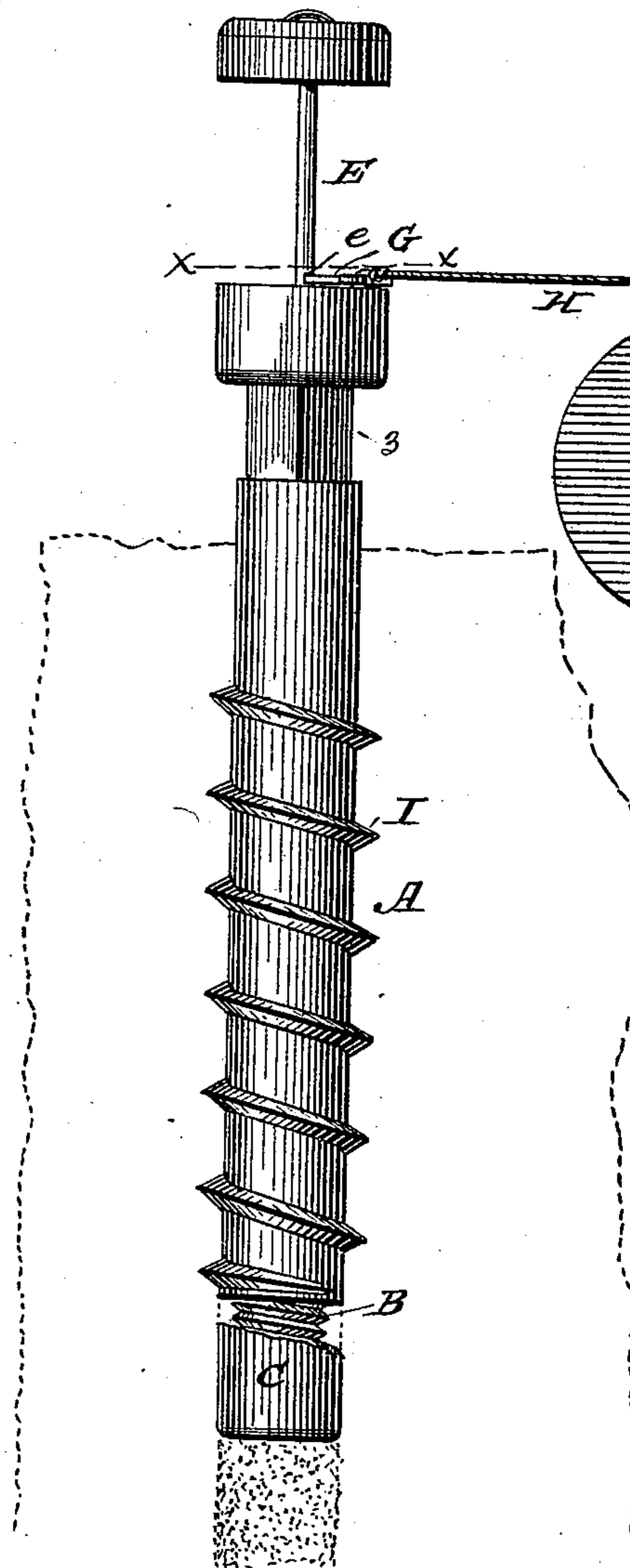


Fig. 3.

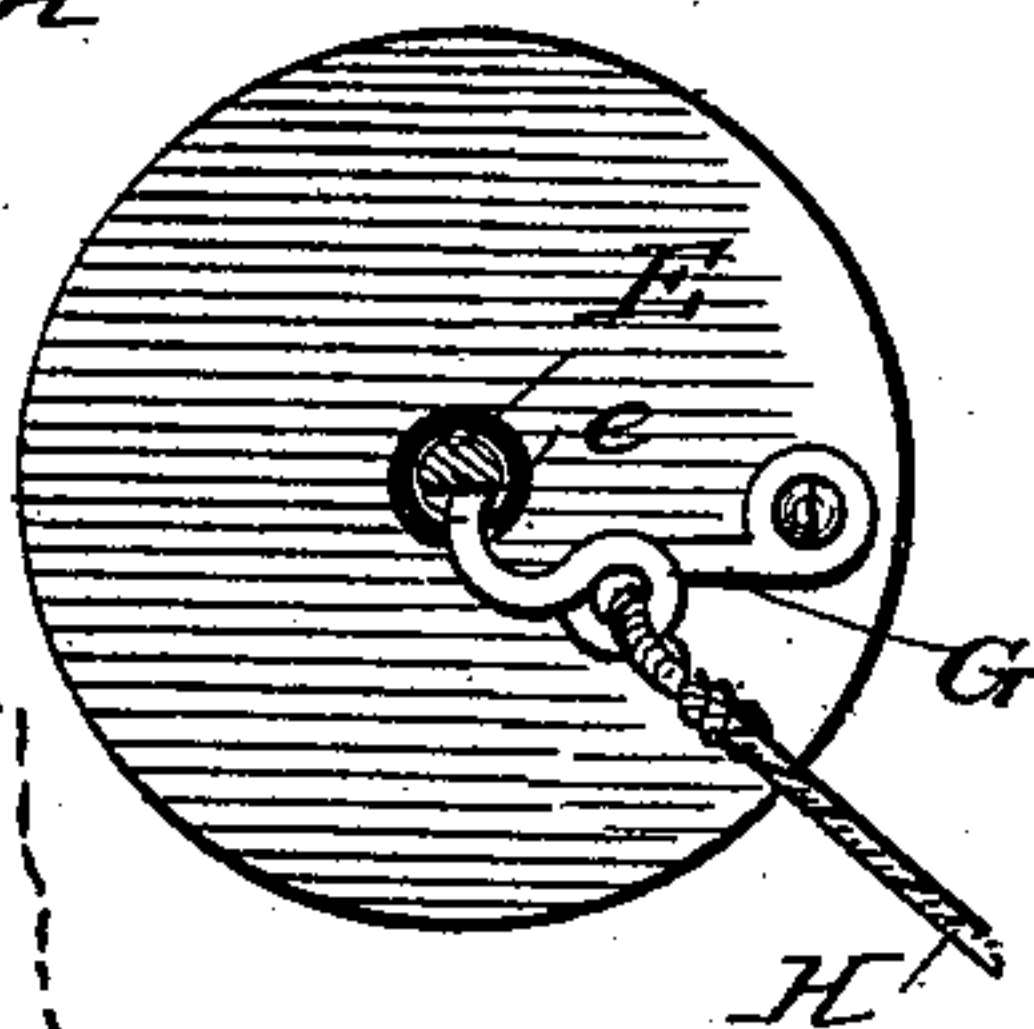


Fig. 2.

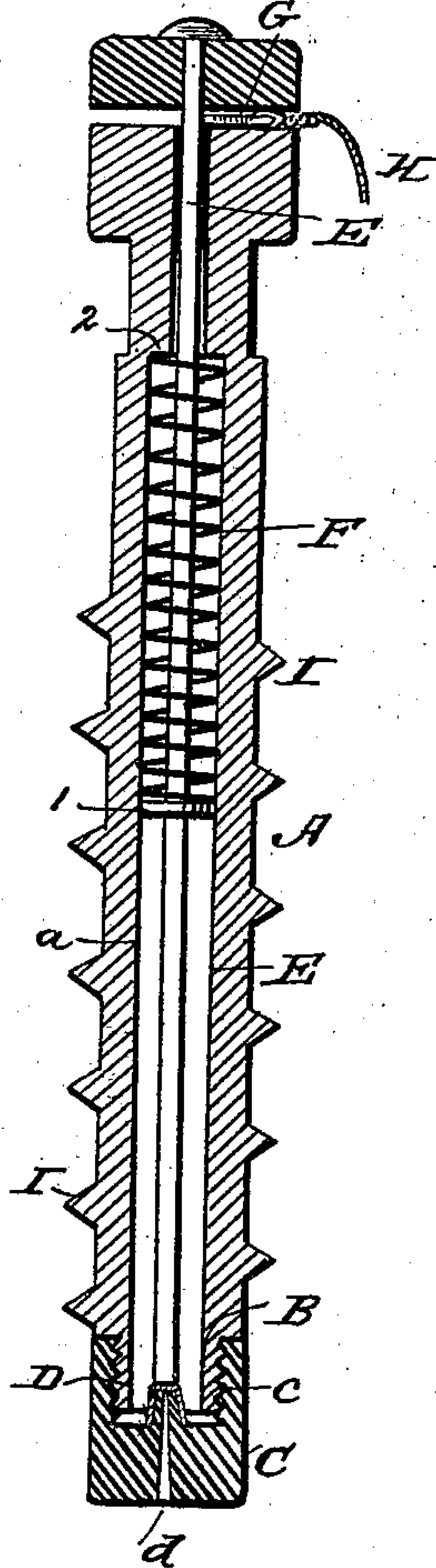
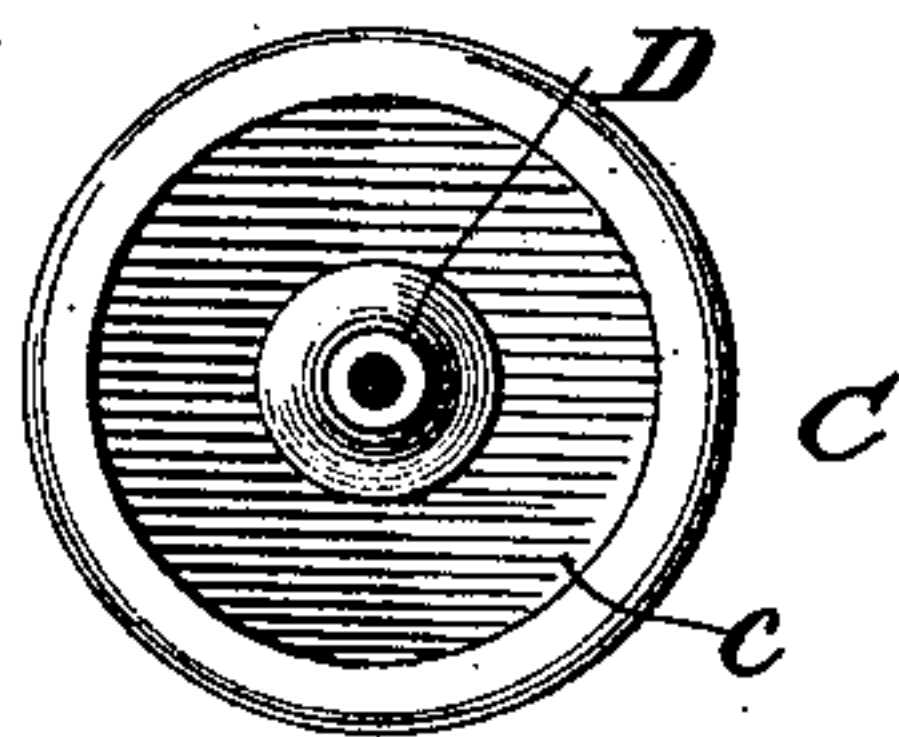


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALFRED WINDER, OF WASHINGTON, DISTRICT OF COLUMBIA.

BLASTING-PLUG.

SPECIFICATION forming part of Letters Patent No. 378,820, dated February 28, 1888.

Application filed August 20, 1887. Serial No. 247,460. (No model.)

To all whom it may concern:

Be it known that I, ALFRED WINDER, of Washington city, in the District of Columbia, have invented a new and useful Improvement in Blasting-Plugs, of which the following is a specification.

My invention is a blasting-plug intended especially for use in blasting wood, particularly stumps and logs; and the invention seeks to provide a simple construction by which the ordinary tamping of rocks and the like in the drilled blasting-hole may be avoided, and by which the use of a fuse may also be avoided.

The invention further seeks to provide convenient means for securing the plug in the blasting-hole, as well as other improvements, as will be described; and the invention consists in certain features of construction and novel combinations of parts, as will be herein-after described, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation, and Fig. 2 a vertical section, of my improved plug. Fig. 3 is a sectional end view thereof on line *x x* of Fig. 1, and Fig. 4 a detail view of the cap-support.

In the blasting of stumps and the like, as now commonly practiced, after the hole is drilled and the charge placed therein the fuse is applied and the hole tamped by broken rock and the like. Frequently the fuse, after being properly fired, fails to burn down to the charge, and it becomes necessary to remove the tamping in order to rearrange the fuse. This is troublesome, and requires considerable time, as will be manifest.

In carrying out my invention I provide a plug which fits the blasting-hole and forms a tamping for the charge, which plug is provided with a cap-support by which to support a cap to explode the charge, a hammer-rod to fire such cap, and a detent for securing such hammer-rod, when desired, and releasing it to fire the cap.

The plug, in the construction shown in Figs. 1 and 2, has a body or main portion, A, formed with a central bore, *a*, and provided at its lower end with a threaded extension, B, which receives the cap-support C. This cap-support has in its upper side a recess, *c*, with threaded walls to engage the extension B of the body or main portion. In this support I provide the cap nipple or seat D, from which a vent, *d*,

leads to permit the passage of the flash to the powder. Manifestly the cap seat or nipple may be conformed or suited to the variety of cap used, that shown being the ordinary gun-cap. The cap-support shown in Figs. 1, 2, and 4, it will be seen, is applied to the body or main portion by threading, and may be removed for the purpose of applying the cap or for removing the debris and cleaning the cap nipple or seat after the cap has been fired.

While I prefer to form the cap-support separate from the body or main portion, and also prefer the construction of removable support shown in Fig. 2, it is manifest that the cap-support and the body portion might be formed in one piece without departing from the broad principles of my invention. In such case the cap would need to be applied and its debris removed through the bore *a*, involving the removal of the hammer-rod and rendering the application of the cap and the cleaning of the device somewhat difficult. For such reason I prefer the removable cap-support.

The hammer-rod E extends through the bore *a*, and is movable at its lower end onto a cap placed on the nipple or seat D. When this hammer-rod is made sufficiently heavy, its gravity will operate to fire the cap, and the spring may be omitted; but in order to render the operation more certain, and to permit the device to operate in a horizontal as well as a vertical plane, I prefer to employ a spring, F, for actuating the rod. In the construction shown this spring is inclosed in the bore *a*, and bears between shoulders 1 and 2 on the hammer-rod and within the bore *a*; but manifestly the arrangement of the spring may be varied without departing from the broad principles of the invention.

To the body A, I pivot the detent G, which engages the hammer-rod, through the aid of a notch, *e*, therein, and serves to retain the hammer-rod elevated, as shown in Fig. 1. By means of the lanyard H the latch may be released by the operator from a safe distance, and the hammer-rod be permitted to descend, fire the cap, and explode the charge.

As a convenient means of securing the plug in the blasting-hole, and of facilitating its application therein, I provide the exterior of the plug with a spiral rib or thread, I, which, by threading into the blasting-hole, enables the

plug to be easily turned thereinto and be properly secured when inserted therein.

The plug might be turned by the aid of a pipe-wrench; but to enable its turning by an ordinary wrench I form it with a non-circular or angular portion at 3, as shown in Fig. 1.

Manifestly this blasting-plug, with the longitudinal bore and its external thread, may be manufactured and sold as an article of manufacture, and the charge-exploding devices be applied by the purchaser and be of the specific construction shown, or of other suitable construction, as will be readily understood.

It will be noticed that I form the thread I and the threads or extension B in similar directions—that is to say, both right-hand threads or both left-hand threads—in order that the turning of the plug into the blasting-hole will not operate to turn the cap-support off the body of the plug, but will rather serve to tighten it on such body.

It is evident that the plug may be used and reused, and that its use will greatly expedite the operation of blasting.

Having thus described my invention, what I claim as new is—

1. The blasting-plug herein described, consisting of the body or main portion having a

longitudinal bore, and provided externally with a spiral rib or thread and having a threaded extension at its lower end, the cap-support threaded on such extension, the hammer-rod operating through the bore of the body or main portion, and the detent pivoted to the body or main portion and arranged to engage the hammer-rod, substantially as set forth.

2. A blasting-plug having its body or main portion provided externally with a spiral rib or thread, and having its lower end formed with a threaded extension to receive the removable cap-support, combined with the cap-support, the hammer-rod, and the detent, the threads on the body or main portion and on its extension being formed in similar directions, whereby the inturning of the plug will not operate to turn off the cap-support, substantially as described.

The above specification of my invention signed by me in the presence of two subscribing witnesses.

ALFRED WINDER.

Witnesses:

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