(No Model.)

# G. FREUND.

## CAP FOR FIRING EXPLOSIVE CHARGES.

No. 289,768. Patented Dec. 4, 1883.

Fig. 1.

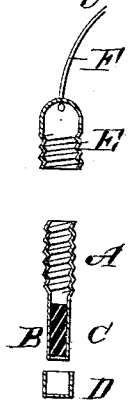



Fig. 2.

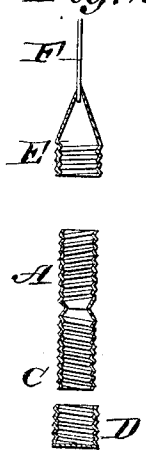



Fig. 5.

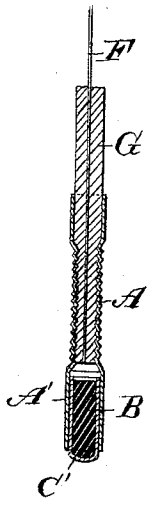



Fig. 6.

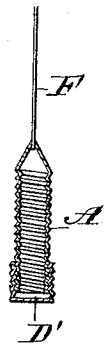



Fig. 3.

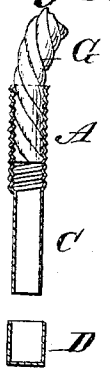



Fig. 4.

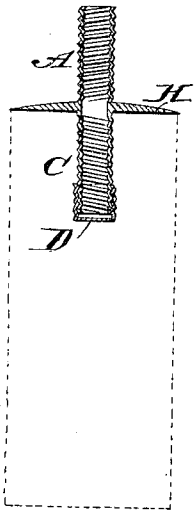
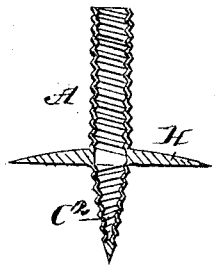



Fig. 7.




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# UNITED STATES PATENT OFFICE.

GEORGE FREUND, OF DURANGO, COLORADO.

## CAP FOR FIRING EXPLOSIVE CHARGES.

SPECIFICATION forming part of Letters Patent No. 289,768, dated December 4, 1883.

Application filed October 9, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE FREUND, of Durango, in the county of La Plata and State of Colorado, have invented a new and Improved Cap for Firing Explosive Charges, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved cap for receiving the fulminate for firing explosive caps in blasting rock, &c.

The invention consists in a screw-threaded tube adapted to receive the fulminate in its lower part, the lower end of the tube being closed by a cap. A cap connected with a conducting-wire is screwed on the upper end of the tube, or the fuse is inserted in the tube.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of my improved cap, showing the parts detached. Figs. 2, 3, 4, 5, 6, and 7 are like sectional views of modifications of the same.

A metal tube, A, is threaded internally and externally to within a short distance from the lower end. A suitable fulminate, B, is placed in the smooth lower part, C, of the tube, and the lower end of the tube is closed by means of a cap, D. A threaded cap, E, to which a conducting-wire, F, is fastened, is screwed on the upper end of the tube A; or a fuse, G, is inserted in the upper screw-threaded part of the tube A, as shown in Fig. 3. If desired, the tube A can be screw-threaded throughout its entire length, and the cap D can also be screw-threaded, if desired, as shown in Fig. 2. As shown in Fig. 4, the screw-threaded tube A shown in Fig. 2 can be provided with an annular flange, H, at about the middle of its length. The tube can be screwed in a giant-candle, which is composed of explosive material, the flange fitting on the upper end of the candle. The fulminate is ignited either by electricity conducted through the wire F or by means of the fuse, and ignites the explosive charge of the giant-candle or the explosive in the drill-hole.

In the modification shown in Fig. 5 the fulminate B is placed in a cap, C′, which is passed into the enlarged lower end, A′, of the tube A, which tube A is screw-threaded, so that the fuse G can be screwed into it. A conducting-wire, F, can be passed through the fuse, as shown in Fig. 5. The cap C′, containing the fulminate, is inserted into the tube A from the lower end. The cap is composed of two pieces only.

In the modification shown in Fig. 6 the entire tube A is screw-threaded, the fulminate is placed in the lower end of the tube, and a cap, D′, is screwed on the lower end of the tube. The upper end of the tube is connected with a conducting-wire, F.

In the modification shown in Fig. 7 the threaded tube A is shown provided with an annular flange and with a screw-threaded point, $C^2$, below the said flange, whereby screwing the tube into a candle is greatly facilitated.

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

1. A cap constructed substantially as herein shown and described, and consisting of a screw-threaded tube adapted to receive a fulminate in its lower part, the lower end of the tube being closed by a cap, as set forth.

2. The combination, with a screw-threaded tube adapted to receive the fulminate in its lower part, of a cap for closing the lower end of the tube, and a cap adapted to be screwed on the upper end, the upper cap being connected with a conducting-wire, substantially as herein shown and described.

3. The combination, with a screw-threaded tube adapted to receive the fulminate in its lower part, and provided with an annular flange at or about its middle, of a cap adapted to close one end, substantially as described.

4. A screw-threaded tube adapted to receive a fulminate, provided with an annular flange at or about at its middle, and with a cap secured on the lower end of the tube, substantially as herein shown and described.

5. The combination, with a tube adapted to receive a fuse or adapted to be connected with a wire, of a cap adapted to receive the fulminate and to be passed into the lower end of the tube for receiving the fuse or for connection with the conducting-wire, substantially as herein shown and described.

GEORGE FREUND.

Witnesses:

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