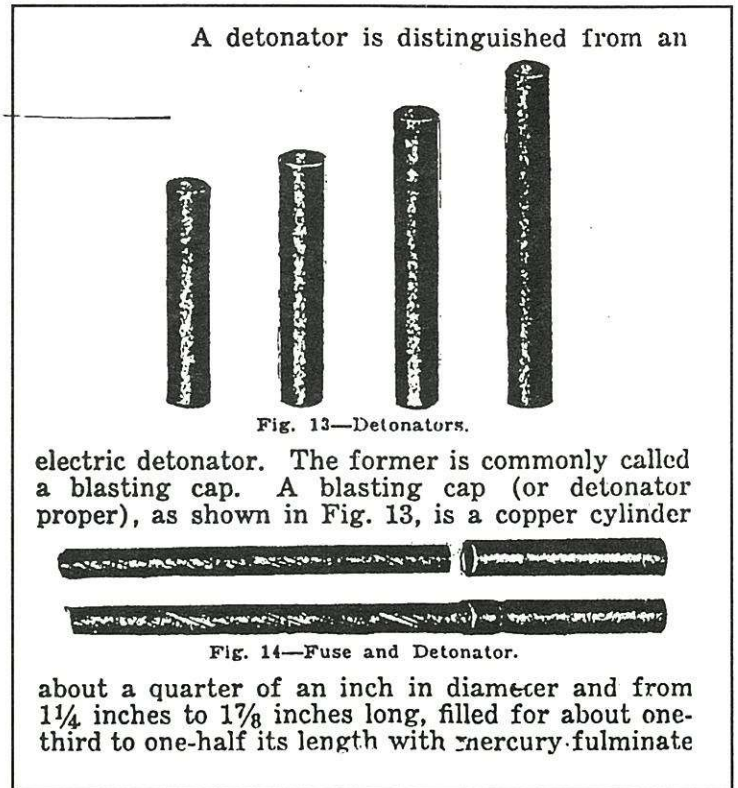


Cap and Fuse Blasting

by Bob Schroth

I have been asked many times, why some miners used electric blasting caps instead of cap and fuse. I recently found a 1914 issue of the *Dupont Magazine*, and this issue had a article of the advantages and disadvantages of cap and fuse versus electric caps:

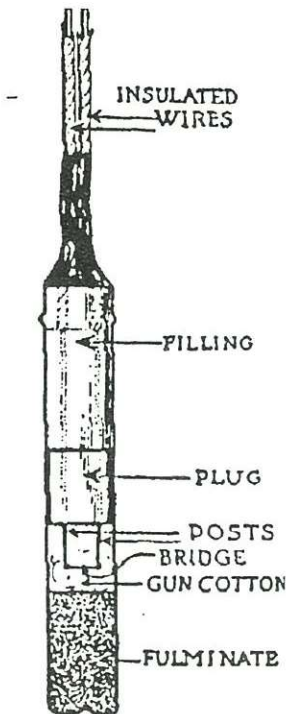
Many coal operators and miners are adopting Permissible Explosives for blasting coal and rock instead of Blasting Powder, because of the greater safety to life and property. How many are using electric blasting caps (instead of fuse and caps) to detonate the permissible explosives, thus insuring further safety?



Blasting caps and electric detonators compared.

Some of the disadvantages of cap and fuse blasting in dusty or gaseous coal mines are:

may detonate before the miner can reach a place of safety, either injuring or killing him.



Sectional view of electric detonator.

1. From mistaken economical reasons, many miners use a short fuse, sometimes called "skin-em-backs," i.e., a fuse about a foot long. They do not place any tamping material on top of the explosive charge in the bore hole and consequently waste a considerable amount of explosive energy. If the charge was properly tamped, much less explosive would be needed, to do the necessary work. There is considerable danger to the miners in the use of "skin-em-backs." The fuse must be lighted before the primer cartridge is properly placed in the bore hole, else a misfire may occur which would leave unexploded dynamite in the remainder of the bore-hole or scattered among the broken pieces of coal. If the primer cartridge is placed in contact with the main charge of explosives the entire charge

2. Any gas present when the fuse is lighted may be ignited by the lighting flame, or by the "spit" of the fuse when it starts to burn.

3. The fuse, when burning in the borehole, may spit out of the side and ignite a gas feeder.

4. Where cheap and unreliable fuse which does not burn regularly is used, the side spit occur much oftener than when higher grades of fuse are used.

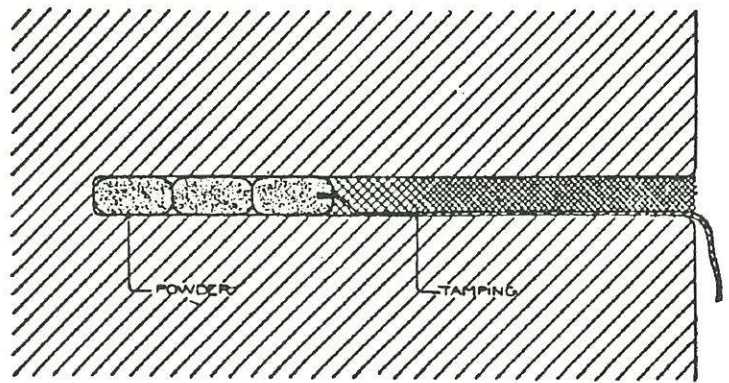
5. After the fuse is lighted, no one can tell exactly when the charge of explosives is going to detonate.

6. Burning fuse adds smoke and fumes to the dust laden air which the miner must breath, and consequently to some degree, affects health.

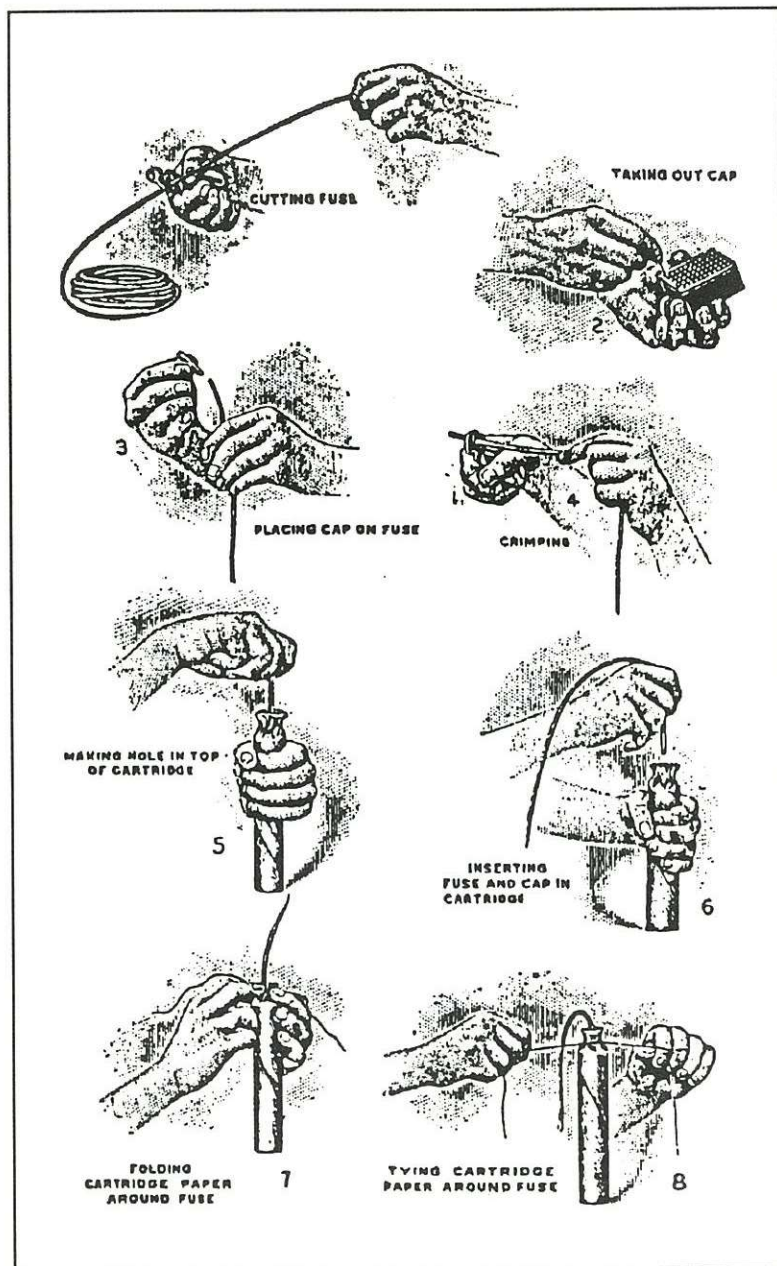
The advantages of electric blasting caps are:

1. They give off no flame on detonation outside of the borehole and consequently cannot ignite mine gas.

2. The miner will naturally tamp the boreholes full of tamping above the explosives charge, because he cannot fire the charge any quicker by reducing the length of the wires.



Drill hole showing fuse in place.



Preparing the cap and fuse.

3. The charge or charges of explosives can be detonated when desired, and that is when certain that every one is out of the danger from flying coal and rock.

4. By connecting the electric blasting caps in a series, more than one charge of explosives can be detonated at one time. This is of material benefit as it reduces the amount of explosives per borehole, as each charge assists the other.

5. If the necessary special equipment is provided all firing can be done from the surface when men are out of the mine, and should a mine explosion occur, there would be no loss of life.

6. Firing when all miners are out of the mine eliminates breathing of the dust-laden air and thus reduces diseases.

7. Electric blasting caps, when stored in a damp mine, do not deteriorate as quickly as blasting caps, because the end of the blasting cap copper capsule must of necessity be left open.

8. The danger of hot candle grease or burning wicks falling into the electric blasting cap and causing an explosion is eliminated.

The above text was taken from the *Dupont Magazine*. I believe western area mines and miners mostly used cap and fuse blasting, because of weight and cost considerations. The cost of electric blasting caps were almost double that of fuse caps.