MILITARY MEDIA INC.

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Detonators

The standard non-electric detonator consists of a brass tube about 1/4" I.D. with thin walls and a length of about 2 1/2" to 3". This tube is sealed at one end and open at the other. The tube contains two explosives, one layer upon the other. The bottom layer is called the base charge and is usually an insensitive high explosive. The top layer is the initiating charge and is a sensitive explosive. At one time the usual blasting cap contained 2 gms. of mercury fulminate and was called a #8 cap. A #6 cap contained 1 gm. of fulminate. Other caps with less strength were numbered lower. Since fulminate is a sensitive explosive, detonators with less of it were safer to handle. To use this type of detonator, a fuse is inserted into the tube and pushed against the fulminate. The tube is then crimped around a blasting fuse with a special tool for this purpose.

An electric detonator consists of the same detonator as above but now an electric match is inserted in place of the fuse and sealed in with a water-proof seal. The wires for the detonator are twisted together or somehow shorted together to keep stray radio signals from causing premature detonation. If the wires are not twisted together, one lead may act as an antenna while the other acts as a ground. If the wires intercept a radio signal, the induced current may be enough to heat up the detonator's filament and cause an explosion. Old detonators were made with a spark gap instead of a filament and were set off when a high voltage spark jumped the gap. This type of detonator can be set off by static electricity generated by walking across a carpet.

Another type of detonator is the exploding brigewire detonator. This uses no primary explosive such as fulminate. Instead, a small diameter wire is used in place of a filament. A capacitor is charged up to say 300 v. and 200 uFD. The capacitor is then discharged through the detonator causing the bridgewire to explode. This microexplosion is enough to cause the initiation of the secondary explosive. If a battery is connected to the detonator, the bridgewire burns through without detonating the explosive. These detonators are very safe to handle and use but the firing circuit is complex. Still another type of detonator is a percussion detonator. This is a mechanically initiated device. It consists of a non-electric detonator with a primer sealed in one end. When a firing pin hits the primer the resulting flash fires the detonator. Sometimes a stab detonator is used. This is very much like the percussion detonator but instead of the firing pin, a needle is used to pierce the sensitive end of the cap.

The most modern detonators include a built in electronic timer that causes detonation at some precise time after the detonation pulse is received. This delay is programmable and is used to tailor the explosion to suit individual needs. The explosive is also configured as a small shaped charge to cause a more perfect detonation of the main charge.