SECTIONS 6

FUZES

0601. It is unnecessary for troops other than those of Bomb Disposal units, to have a detailed knowledge of the construction and method of operation of bomb fuzes. It is desirable, however, in order that the dangers associated with unexploded bombs shall be fully appreciated, what all ranks of all arms should understand with types of fuzed there are and the principles upon which they operate.

Electrical and Mechanical Fuzes

0602. The fuzes used to date fall roughly into two classes-those operated electrically and those which are primarily mechanical.

a. Electrical fuzes contain a source of electrical energy such as a dry battery or charged condenser in a circuit which is open at one point. The fuze functions when the circuit is closed (Fig 6-1).

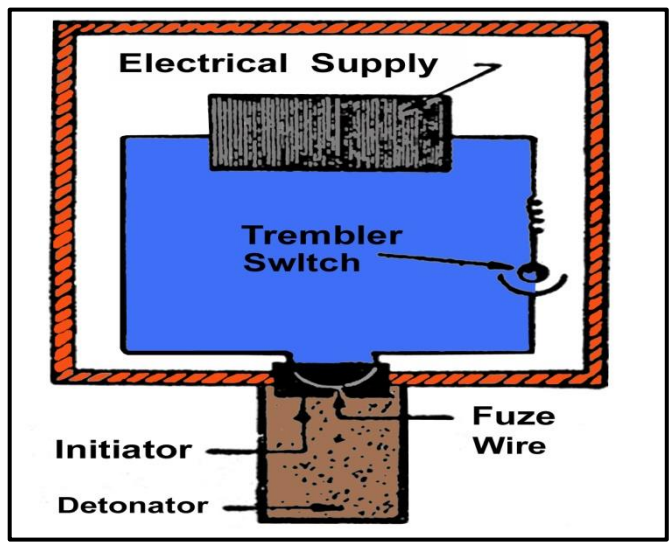

Fig 6-1: Basic Circuit of Typical Electrical Impact Fuze

b. Mechanical fuzes in their simplest form, operate when a striker is driven into a cap (Fig 6-2).

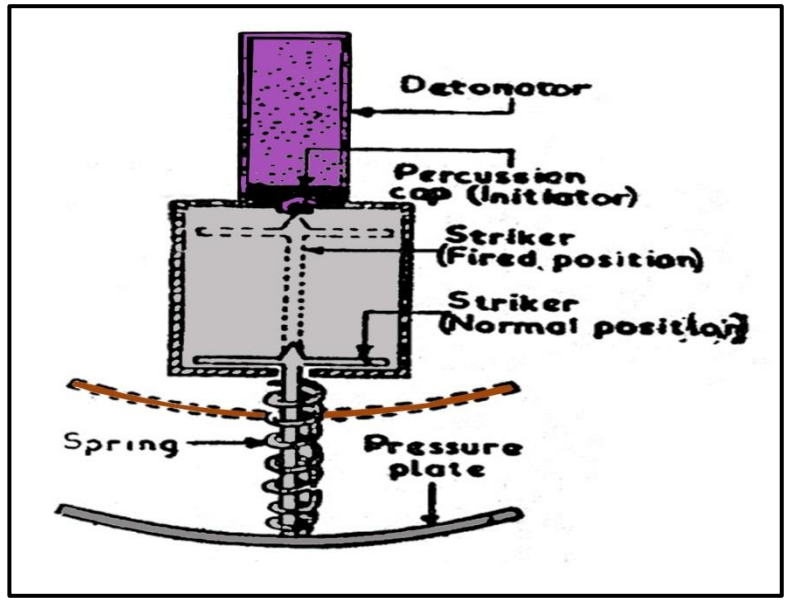

Fig 6-2: Action of Typical Mechanical Impact Fuze

Types of Fuzes

0603. Fuzes working on either the electrical or mechanical principle can be grouped in four main types.

a. Airburst and proximity fuzes which operate at a predetermined distance from the target.

b. Impact and short delay fuzes which operate upon impact with the target or after only slight penetration (short delay indicating at the most, a delay of a few seconds).

c. Long delay fuzes which operate at some predetermined time after coming to rest.

d. Anti-disturbance and booby trap fuzes which operate after coming to rest, when various disturbing influences are felt.

The Dangers Associated with Fuzes

0604. Fuzes in UXBs may be dangerous either by design or by accident.

a. Fuzes which are designed to operate after impact are:

(1) **Long Delay Fuzes**. Which usually operate by means of a clockwork mechanism or by the gradual destructive effect of a chemical reaction. They can be set to cause detonation minutes, hours or days after the bomb has been dropped.

(2) **Anti-disturbance Fuzes**. Which, if of the electrical type, usually function when vibration or movement closes a sensitive switch and completes the circuit. The mechanical type generally contains a delicate trip mechanism which releases a spring loaded striker in response to the slightest movement. Other anit-disturbance fuzes function if metal is brought into the vicinity, if particular sound waves are picked up, if light falls on a photo-electric cell or if movement occurs in the vicinity.

b. Airburst, proximity, impact and short delay fuzes are not designed to function after the bomb has come to rest and in UXBs are, therefore, nominally 'duds'. But it is possible for some such fuzes to remain at half-cock and still function if disturbed.

c. Booby traps may be incorporated in any type of fuze or exploder system to prevent the fuze being made safe or withdrawn.

Estimating the Fuzing of a UXB

0605. If the fuzing of a UXBs is known or can be estimated, suitable precautions can be taken to lessen the chance of explosion or to guard against the effects of spontaneous explosion. If the fuzing is not known and cannot be estimated, it is necessary to assume that the bomb contains the worst possible combination of fuzes. Engineer units may be given sufficient data to identify fuzes in bombs on the surface. Other units almost certainly will not. If the missile can be identified however, even only as to type, the fuzing can often be estimated. Bombs on the surface can be accurately identified by reference to intelligence bulletins. Even without such data the type can easily be determined by inspection (see Sec 7.) Buried bombs can also often be identified (Secs 3, 17 and 20) or their fuzing estimated from the behavior of other bombs in the stick or from a general knowledge of enemy fuzing tactics.

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