UNIT- I

FIREARMS

Definition :-

(1) BALLISTICS - Study of motion, behaviour and effect of projectile and firearm.

(2) FORENSIC BALLISTICS - It is the study of firearm and ammunition for the purpose of law.

(3) FIREARM - It is a device used to hurl projectile or projectiles with force.

(4) ARMS ACT, 1959

A/c to Arms Act 1959, a firearm means arm of any description, designed or adapted to discharge a projectile or projectiles of any kind by the action of any explosive or other forms of energy and includes-

(i) Artillery, hand grenades, riot pistols or weapons of any kind, designed or adapted for the discharge of any noxious liquid, gas or other such things.

(2) Accessories for any such firearm designed or adapted to diminish the noise or flash caused by the firing thereof.

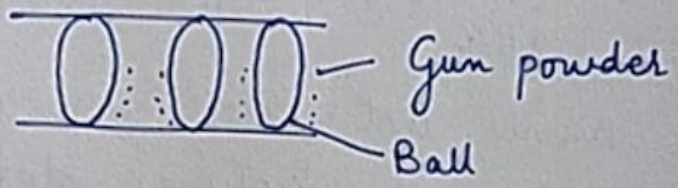
(3) Parts of and machinery for manufacturing firearms and cartridges, platforms and appliances for mounting, transporting and serving artillery.

HISTORY AND DEVELOPMENT OF FIREARMS

(1) GUN POWDER

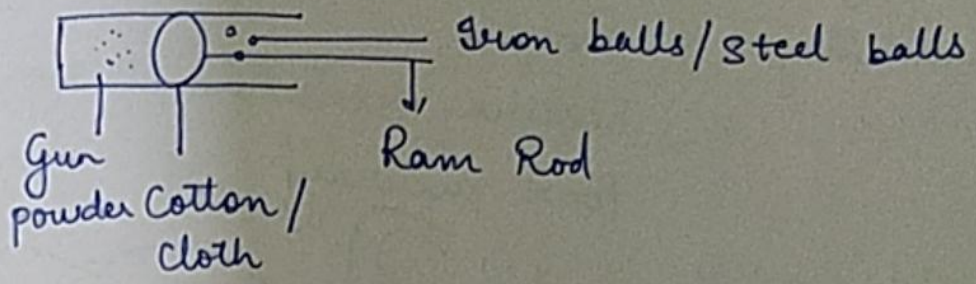
- It was invented in 1260 in China.
- Composition - KNO_3 (Potassium nitrate) = 75%
  Charcoal = 15%
  Sulphur = 10%
- Also known as Black powder.

(2) ROMAN CANDLES



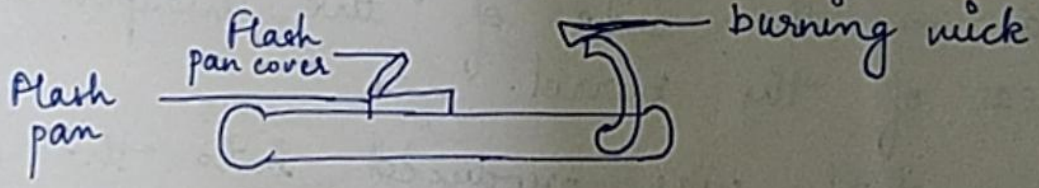
- The first use of Gun Powder was done in Roman Candles. It was used by Roman people just for fun.
- Roman candles are a hollow wooden tube in which one end is open and other is closed. The gun powder is inserted through the open end and is known as Muzzle end. These firearm were known as Muzzle loaders.

(4) CANONS



- First metallic firearm used.
- They were made by metallic tube.
- In canons, apart from gun powder, small metallic pieces and balls were added. It was done to produce noise and smoke.
- This type of ammunition is known as Separate Loading Ammunition. These are also Muzzle Loaders.

(5) MATCH-LOCK MECHANISM FIREARMS

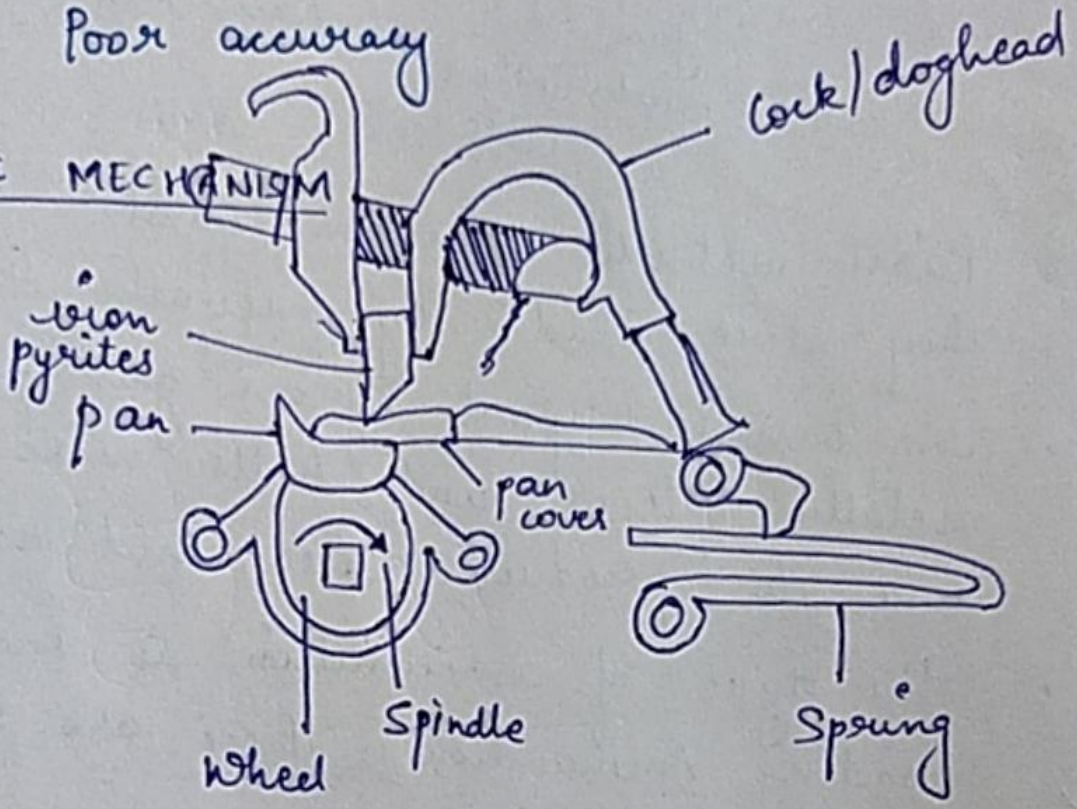


- The matchlock was the first mechanical firing device. It consisted of an S-shaped arm, called a SERPENTINE, that held a match, and a trigger device that lowered the serpentine so that the lighted match would fire the priming powder in the pan attached to the side of the barrel.

Advantage - 1st trigger

Disadvantage - Fragile
Weather sensitive
Poor accuracy

(6) WHEEL LOCK MECHANISM



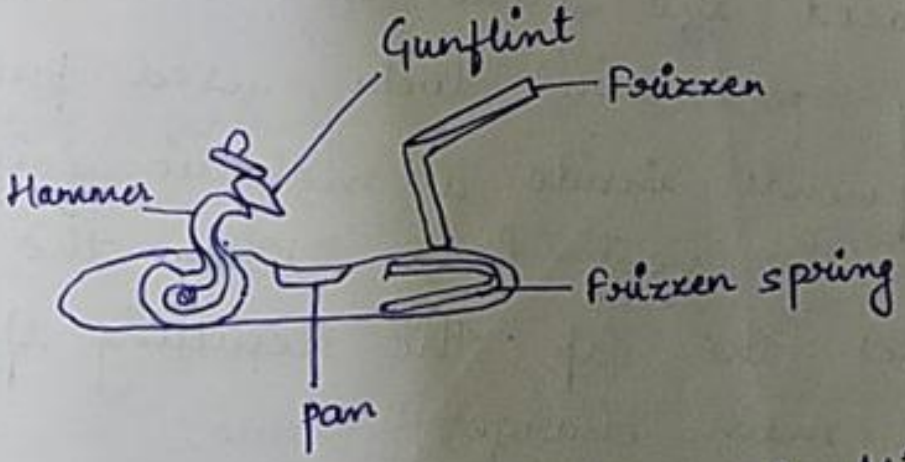
- The wheel lock consisted of a serrated wheel, mounted on the side of the weapon at the rear of the barrel.
- Part of wheel was produced into the small pan, the flash pan or priming pan which contained the priming charge for the touch hole.
- A piece of iron pyrite was fixed in its jaws. This was kept in light contact with the serrated wheel by means of a strong spring

- Sparks produced from the friction of the pyrite on the serrated wheel ignited the primary charge which in turn ignited the main powder charge and fired the weapon.

PROS - Shorter lockstime
better accuracy
Less weather sensitive

CONS - Fragile as
Very exp. to manufacture

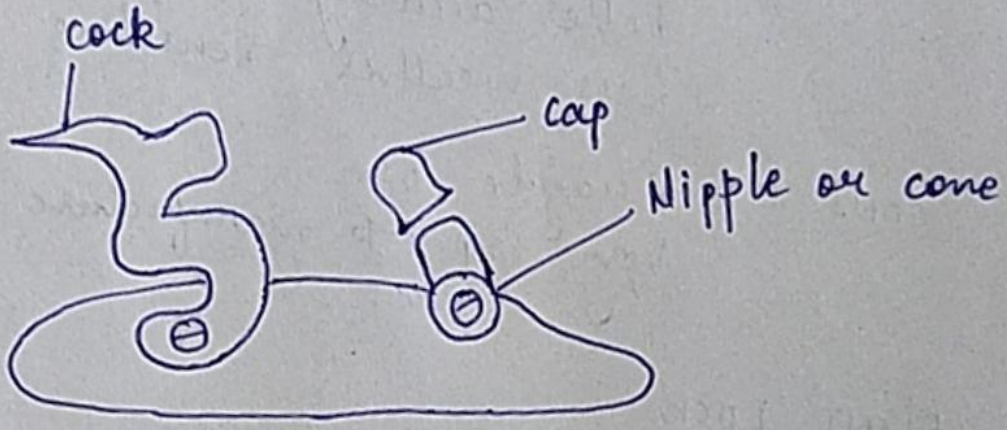
(7) FLINT LOCK



- In flintlock guns, a piece of flint was fixed to a jaw shaped device, like an ordinary gun-hammer which could be operated with a trigger.
- On pressing the trigger, the hammer holding the flint would fall and strike a metal piece kept over the

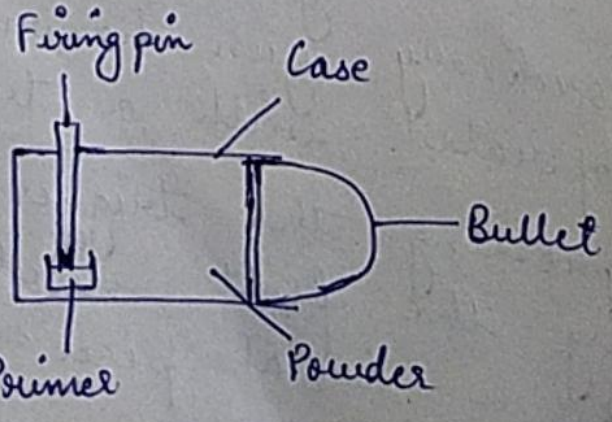
flash pan. The spark so produced lighted the charge in the same way as in the wheel lock system.

PERCUSSION SYSTEM



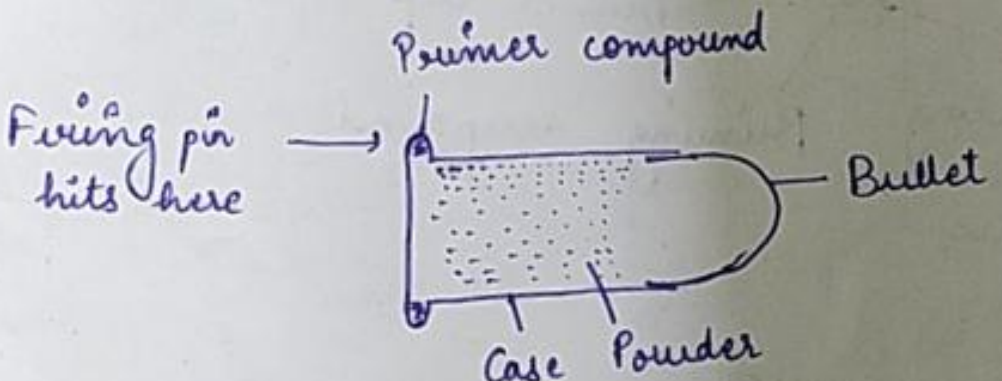
- The percussion lock also called caplock replaced the flint lock in early 1800s.
- Early percussion locks used priming compounds inside a metallic foil cap placed over the vent hole. When the hammer strikes the cap, the resulting spark ignites the main charge.

PIN-FIRE SYSTEM



In this system, the percussion cup was inside the cartridge case while a pin, which rested on the percussion cup, protruded through the side of the cc. Striking the pin with the weapon's hammer drove the pin into the priming compound causing it to detonate and so ignite the main propellant charge.

(10) THE RIMFIRE SYSTEM



The rimfire cartridge is a thin-walled cartridge with a hollow flanged rim. Into this rim is spun a small quantity of a priming compound. Crushing the rim with the firing pin causes the priming compound to explode, thus igniting the propellant inside the case.

(11) CENTRE FIRE SYSTEM

In centre fire ammunition, only the primer cup needed to be soft enough to be crushed by the firing pin.