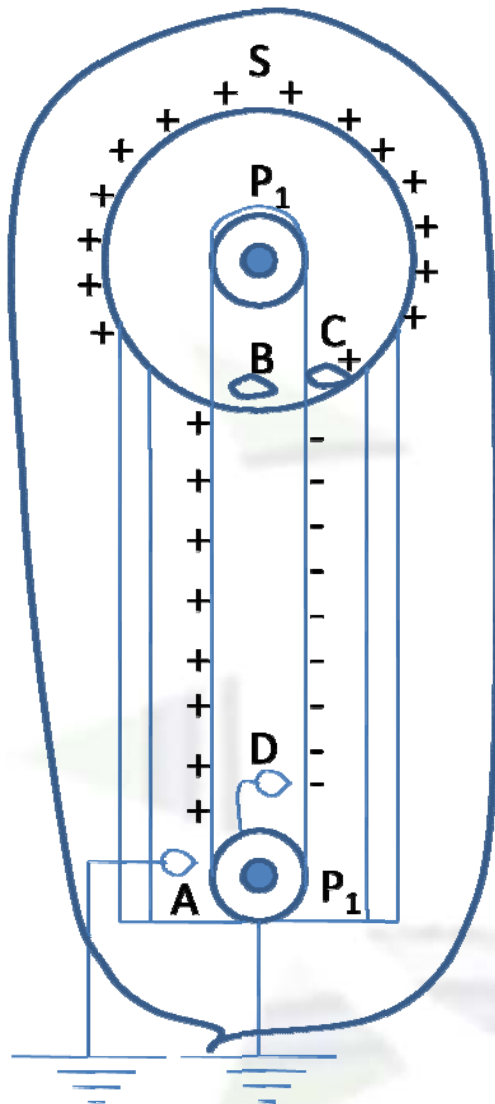




Van de graff Generator

Van de Graaff generator: It is a machine for producing a very high D.C voltage which is of the order of few million volts which is used for crushing atoms and is based on principle of induction.



It consists of a large metallic shell S of about 18 to 20 ft in diameter and is supported on concrete pillars. A belt of some insulating material such as silk or rubber is made to run between P_1 and P_2 driven by a electric motor. The pulley P_1 lies inside the shell S and the pulley P_2 is earthed. A, B, C and D are four pointed conductors connected with their pointed ends as shown. If the S is to be positively charged then the conductor A is connected to the +ve terminal of battery emf about 100 volts. The -ve terminal of the battery is being earthed.

The +ve charge in A from the battery is discharged through the pointed ends on the ascending belt by corona discharge. The charge carried up by the belt and when it comes near B the pointed B collects the charge from the belt. This positive charge on the conductor B induces an equal -ve charge at the pointed end of conductor C and free equal +ve charge at the far end of C which is distributed on the outer surface of the shell S . The -ve charge at the pointed end of C is discharged on the descending belt. When it comes near D , D collects the charge and sends it to earth through the pulley P_2 .

Thus at every cycle +ve charge is distributed on the surface of the shell S . Thus by applying potential of about 100volt the potential of the shell S can be raised up to few million volts. At such high voltage insulation of the surrounding air breaks and air becomes conducting charge from shell s will flow to earth. This is prevented by enclosing the whole thing in a big metallic tank M in which air is introduced at very high pressure 100 lbs/sq inch, due to which the break down potential of air increases.