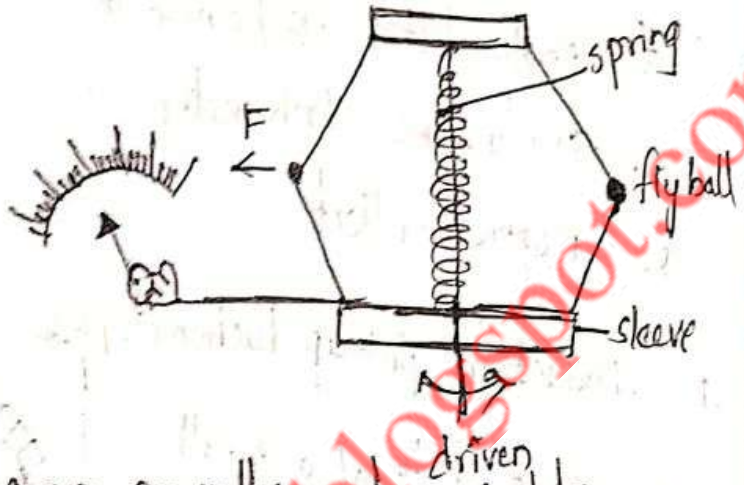
Mechanical Tachometers :- measurement of speeds

(a) Reed vibrating tachometer :-



→ Centrifugal tachometers are generally made Shabt as multible range to determine speed over a wide range.

→ Centrifugal tachometers are frequently used to measure rotational speed upto 60,000 rpm with an accuracy of ±1%.

→ the device operates on the principle that Centrifugal force is proportional to the speed of rotation

→ two fly balls are arrange about a ~~Centrifugal~~ f Control shaft Centrifugal force developed by these rotating balls compren the spring

→ the series of linkages amplify the motion of sleeve that comunicated pointer show the spring

Advantages :-

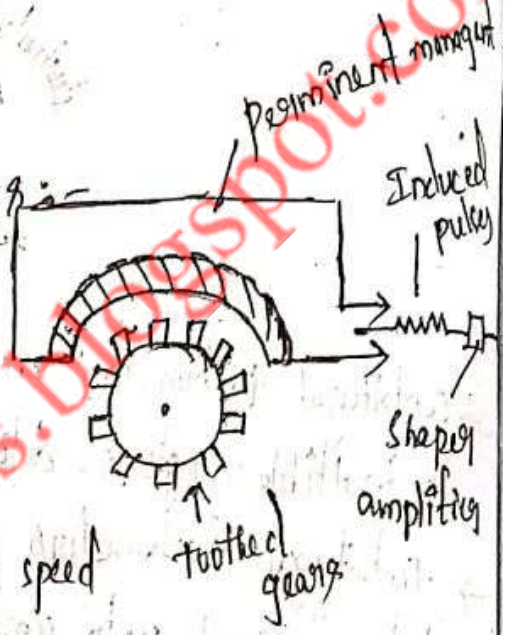
→ the revolution contor stop watch mechanism if that there indicate whether (or) not the speed remains constant.

(B) Electrical Tachometers

(i) Electrical contact less Tachometers –

1. Inductive pickup tachometers
2. capacitive type pickup tachometers
3. photo electric tachometers
4. Stratoscope tachometer
5. Doppler effect

1. Inductive pickup tachometers :-



→ The unit consists of a small permanent magnet with a coil around it this pickup is placed here a metalic toothed rotor, were speed to be measured.

→ when the shaft is rotate change to the relvefence after Magnetic circuit. These results change in voltage in the coil the frequency of pulse is depends upon the no. of theeths on the rotor and its speed of rotation

let T – No. of teeths

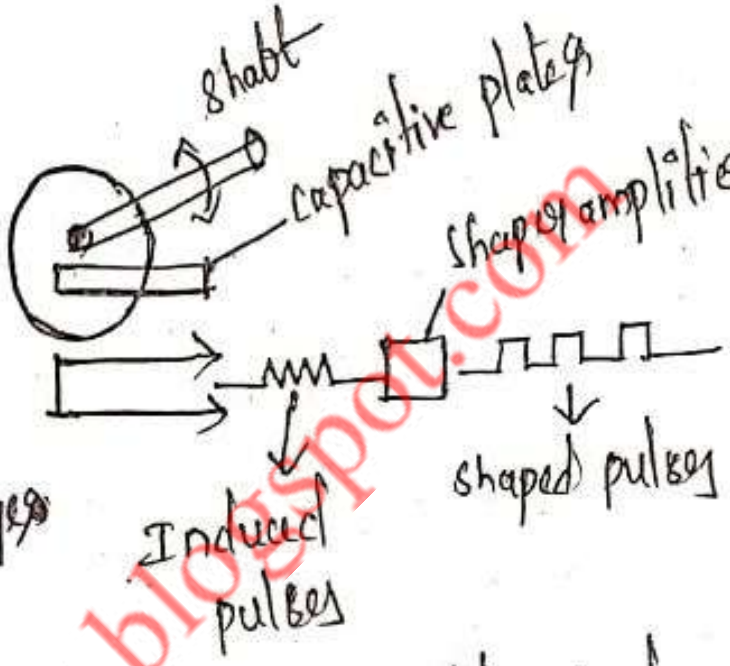
N – no. of revolutions/sec

P – no. of pulses/sec

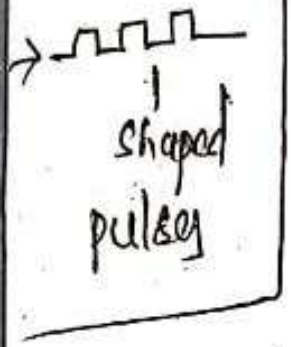
$$N = \frac{P}{T}$$

2. Capacitive type pickup tachometer:-

→ the device consists of a rotating plate (vane) attached to one of the shaft. when the shaft rotates blw the fixed capacitors, Those occurs changes in the result capacitance.



→ the capacitor form a part of an oscilator that counts no. of rotations. the produced pulses are amplified in shaped amplifier and also squared.



3. photo electric tachometers :-