(a)

A

B

(b)

L A

B E

(c)

L A

B E

(d)

L A

B E

If the eye piece is now moved round by an amount equal to the lag of disc B, then the slot in the eye piece will be opposite to the slot in disc B as shown in Fig. (d) and hence the eye piece receives flash of light.

The eye piece is moved by operating a micrometer spindle and by means of scale and vernier, the angle of twist may be measured upto 1/100th of a degree.

The torsion meter discussed above gives the angle of twist of the shaft, when the uniform torque is transmitted during each revolution as in case of turbine shaft.

But when the torque varies during each revolution as in reciprocating engines, it is necessary to measure the angle of twist at several different angular positions. For this, the discs A and B are perforated with slots arranged in the form of spiral as shown in Fig.

The lamp and the eye piece must be moved radially so as to bring them into line with each corresponding pair of slots in the discs.

Brakes

A brake is a device by means of which artificial frictional resistance is applied to a moving machine member, in order to retard or stop the motion of a machine. In the process of performing this function, the brake absorbs either kinetic energy of the moving member or potential energy given up by objects being lowered by hoists, elevators etc. The energy absorbed by brakes is dissipated in the form of heat. This heat is dissipated in the surrounding air (or water which is circulated through the passages in the brake drum) so that excessive heating of the brake lining does not take place. The capacity of a brake depends upon the following factors :

1. The unit pressure between the braking surfaces,

2. The coefficient of friction between the braking surfaces,

3. The peripheral velocity of the brake drum,

4. The projected area of the friction surfaces, and

5. The ability of the brake to dissipate heat equivalent to the energy being absorbed

Materials for Brake Lining

The material used for the brake lining should have the following characteristics :

1. It should have high coefficient of friction with minimum fading. In other words, the coefficient of friction should remain constant with change in temperature.

2. It should have low wear rate.

3. It should have high heat resistance.

4. It should have high heat dissipation capacity.

5. It should have adequate mechanical strength.

6. It should not be affected by moisture and oil.

Types of Brakes

The brakes, according to the means used for transforming the energy by the braking elements, are classified as :

1. Hydraulic brakes e.g. pumps or hydrodynamic brake and fluid agitator,

2. Electric brakes e.g. generators and eddy current brakes, and

3. Mechanical brakes.

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