In order to avoid the slipping, a number of projections (called teeth) as shown in Fig. (b), are provided on the periphery of the wheel A, which will fit into the corresponding recesses on the periphery of the wheel B. A friction wheel with the teeth cut on it is known as toothed wheelor gear.

Advantages and Disadvantages of Gear Drive

Advantages

1. It transmits exact velocity ratio.
2. It may be used to transmit large power.
3. It has high efficiency.
4. It has reliable service.
5. It has compact layout.

Disadvantages

1. The manufacture of gears require special tools and equipment.
2. The error in cutting teeth may cause vibrations and noise during operation.

Classification of Toothed Wheels

1. According to the position of axes of the shafts.

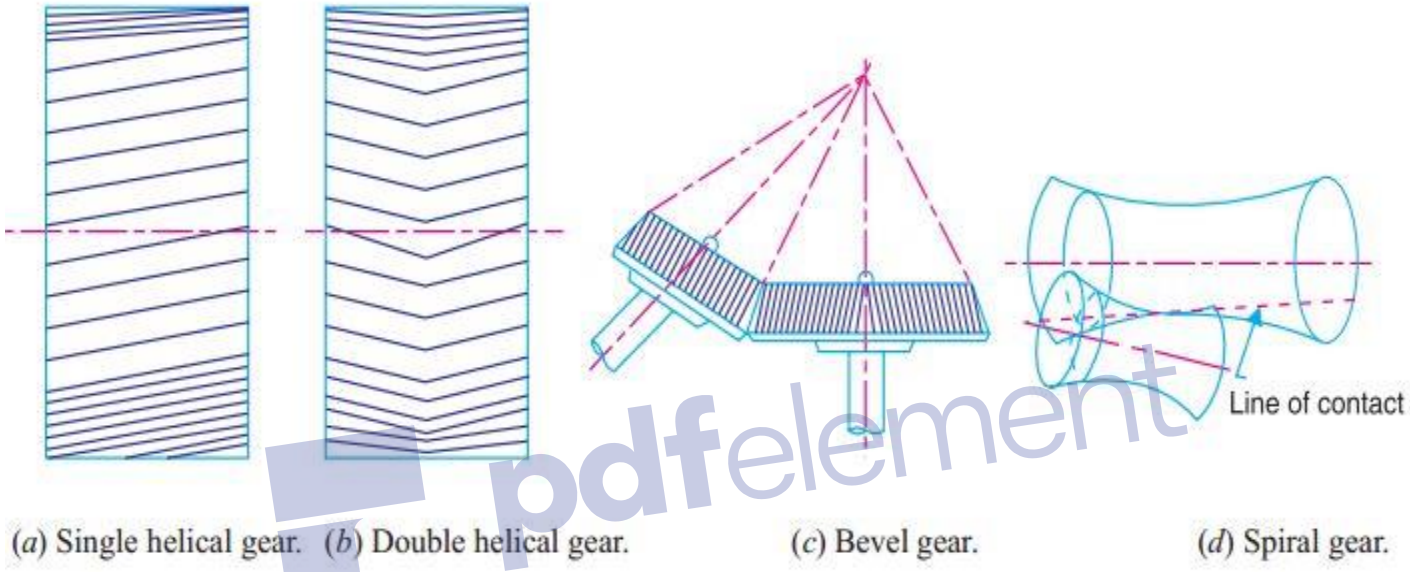
(a)Parallel,

(b)Intersecting, and

(c)Non-intersecting and non-parallel.

The two parallel and co-planar shafts connected by the gears is shown in Fig.. These gears are called spur gears and the arrangement is known as spur gearing. These gears have teeth parallel to the axis of the wheel as shown in Fig.

. Another name given to the spur gearing is helical gearing, in which the teeth are inclined to the axis. The single and double helical gears connecting parallel shafts are shown in Fig. 12.2 (a) and (b) respectively. The double helical gears are known as herringbone gears. A pair of spur gears are kinematically equivalent to a pair of cylindrical discs, keyed to parallel shafts and having a line contact. The two non-parallel or intersecting, but coplanar shafts connected by gears is shown in Fig. (c). These gears are called bevel gears and the arrangement is known as bevel gearing. The bevel gears, like spur gears, may also have their teeth inclined to the face of the bevel, in which case they are known as helical bevel gears. The two non-intersecting and non-parallel i.e.non-coplanar shaft connected by gears is shown in Fig. (d). These gears are called skew bevel gears or spiral gears and the arrangement is known as skew bevel gearing or spiral gearing.



(*a*) Single helical gear. (*b*) Double helical gear. (*c*) Bevel gear. (*d*) Spiral gear.

2. According to the peripheral velocity of the gears.

The gears, according to the peripheral velocity of the gears may be classified as :

(a)Low velocity, (b)Medium velocity, and (c) High velocity.

The gears having velocity less than 3 m/s are termed as low velocity gears and gears having velocity between 3 and 15 m/s are known as medium velocity gears. If the velocity of gears is more than 15 m/s, then these are called high speed gears.

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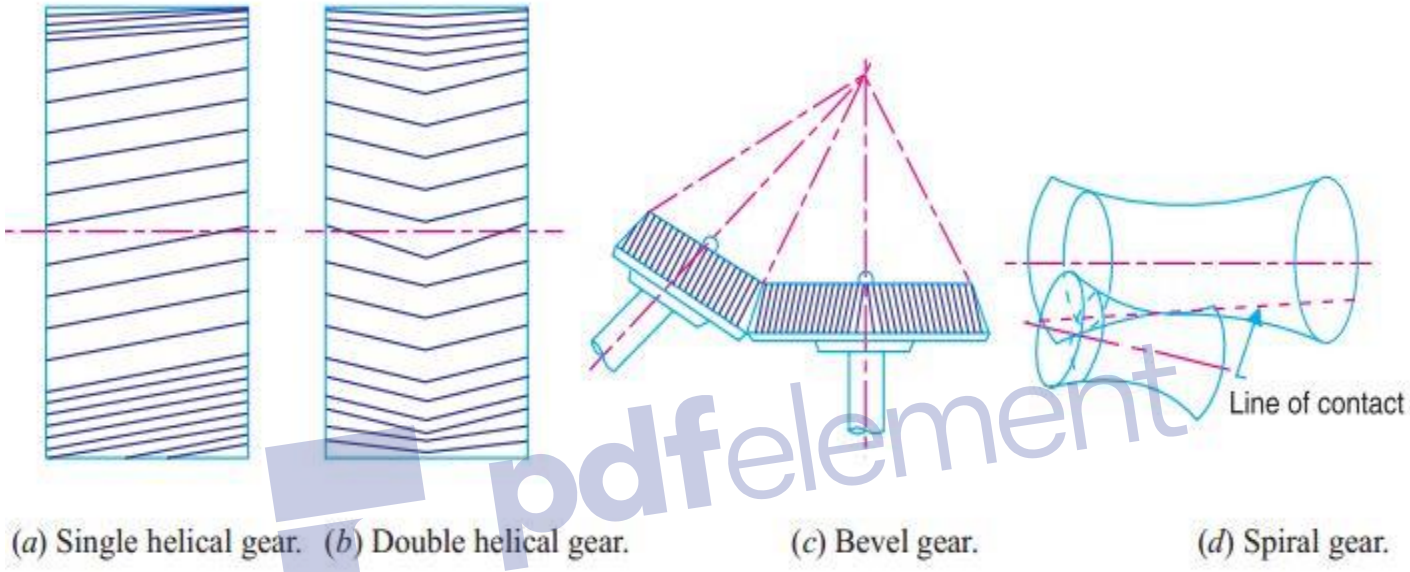

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