- (iii) Second gear:
- When the gear shift fork is moved toward direction 2, the second sliding gear (6) will be shifted backward to mesh with the second speed gear (3) but gear (5) and gear (4) are unmeshed. The rotation of input shaft is transmitted in the order (1) :::}(2) :::}(3) :::}(6) to tum the output shaft, as shown in Figure 3.18. It is the transmission in the second speed.

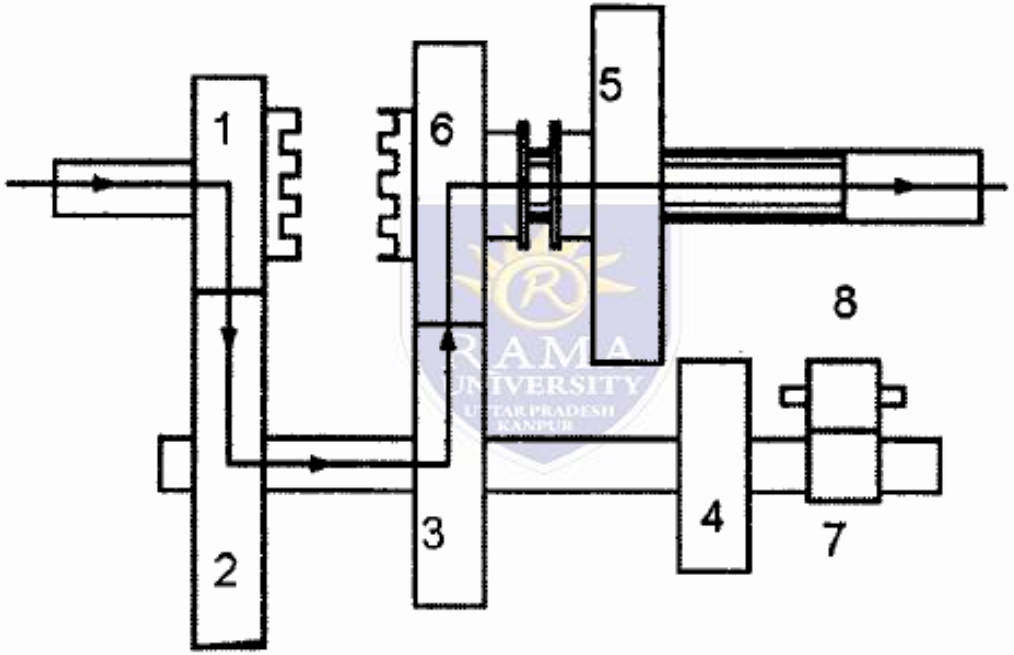

Figure 3.18 Second gear

- iv) Third or top gear:
- When the gear shift fork is moved toward direction 3, the clutch (6) will be meshed directly with the clutch gear (1) and gear (3) is unmeshed, as shown in Figure 3.19.
- Due to this, both the input and output shafts are coupled and rotated together
- It is the transmission in the third or top speed.

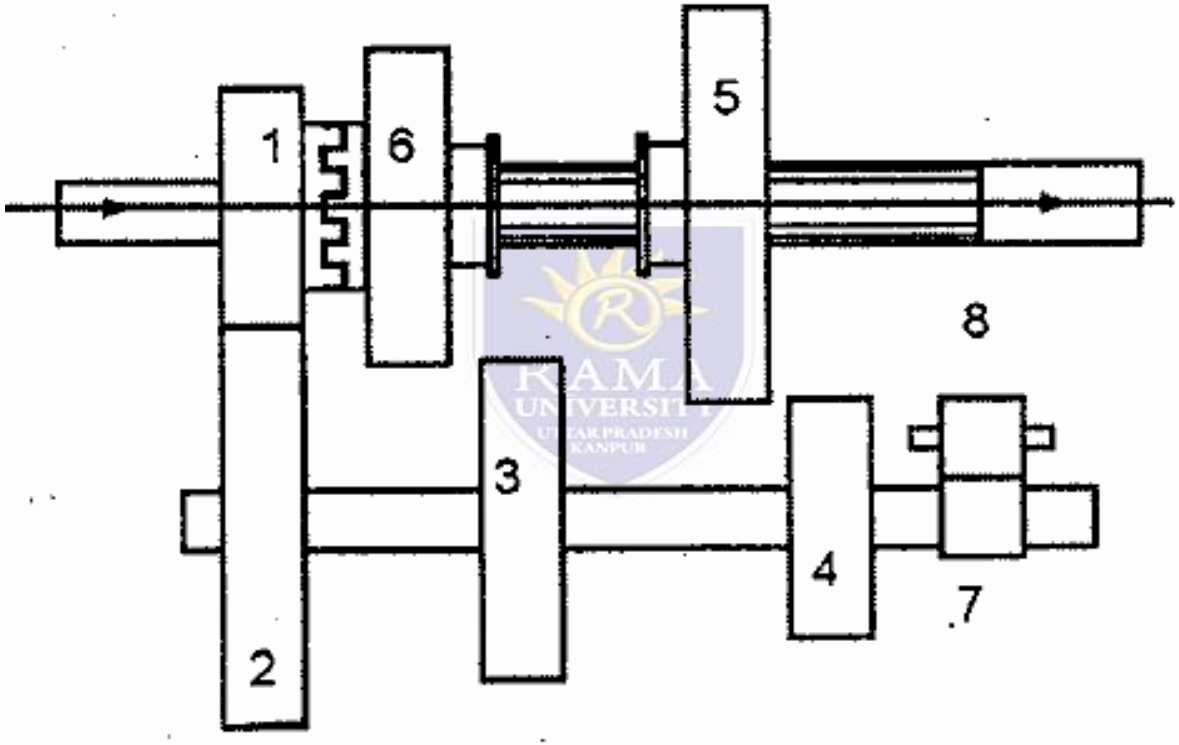

Figure 3.19 Third or top gear

- (v) Reverse gear:
- When the gear shift fork is moved toward direction R, the sliding gear'(S) will be shifted backward to mesh with the reverse idler gear (8), as shown in Figure 3.20.
- Then the rotation of input shaft is transmitted in the order (1) => (2) => (7) => (8) => (5) to turn the output shaft in reverse direction. It is the transmission in reverse speed.
- Even though there is no measure to allow easy meshing of gears, "double clutching" technique must be acquired for shifting gears properly. The gears also have some disadvantages such as noisy and defects. So, this type is not practically in current use.

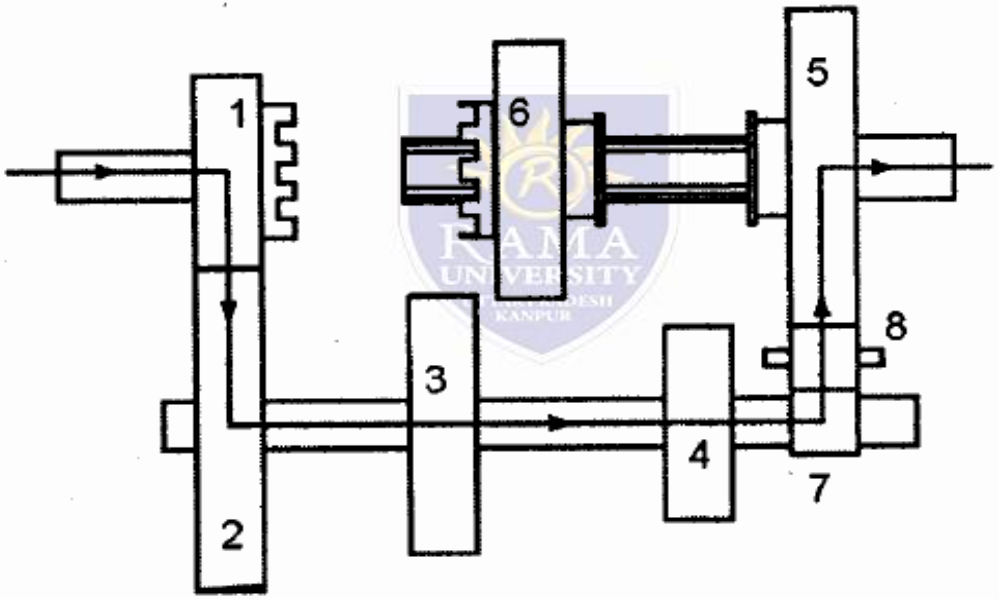

Figure 3.20 Reverse gear

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- Constant Mesh gear Box:
- Figure 3.21 shows the construction ofa constant mesh type gearbox having three forward and one reverse speeds
- In this type of gearbox, all gears are in constantly in mesh and dog clutches are used for engaging and disengaging the gears. The dog clutches (D) and D2) are mounted on the main shaft. One (D2) is connected between clutch gear and reverse gear whereas the other (D)) is placed between low speed gear and reverse gear.
- The splines are provided on the main shaft for the linear movement of dogs.
- Dog clutch can slide on the shaft and rotate along with it. All gears are rigidly fixed on the counter shaft.
- All main shaft and lay shaft gears, and idler gears are engaged by dog clutch to obtain opposite and slow speed.
- Only reverse gears are spur gear type and all others are helical gears.

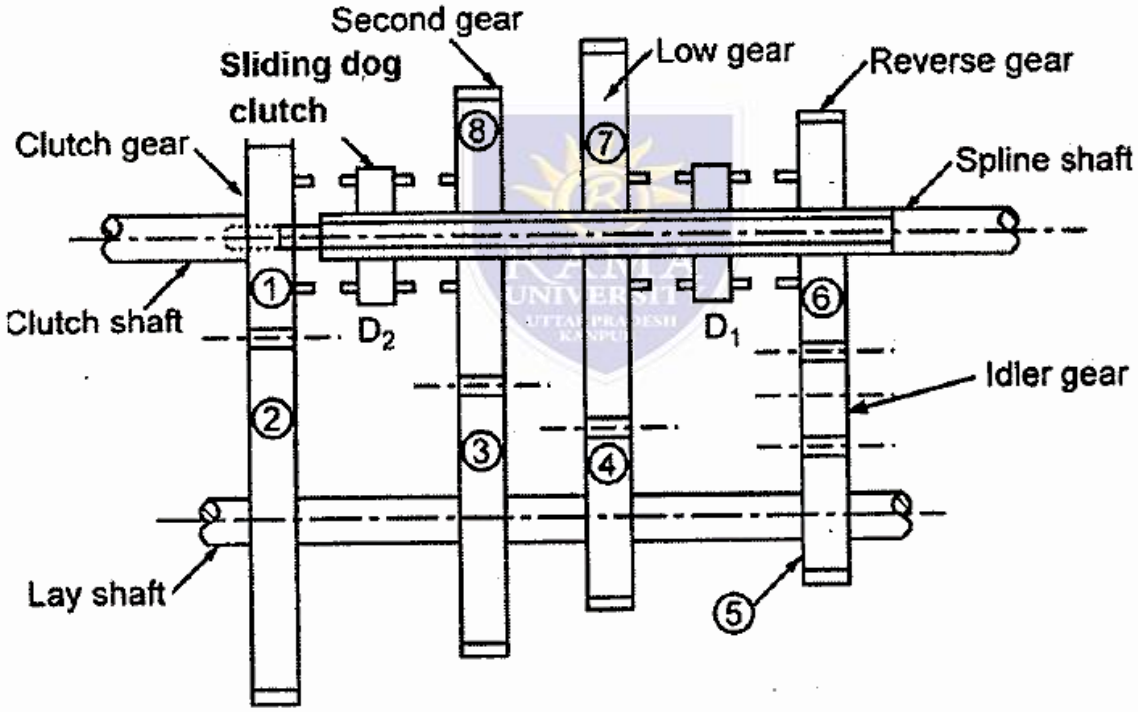

Figure 3.21 Constant mesh gearbox