

EXHIBIT 1

TIGER DICTIONARIES

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gear shift

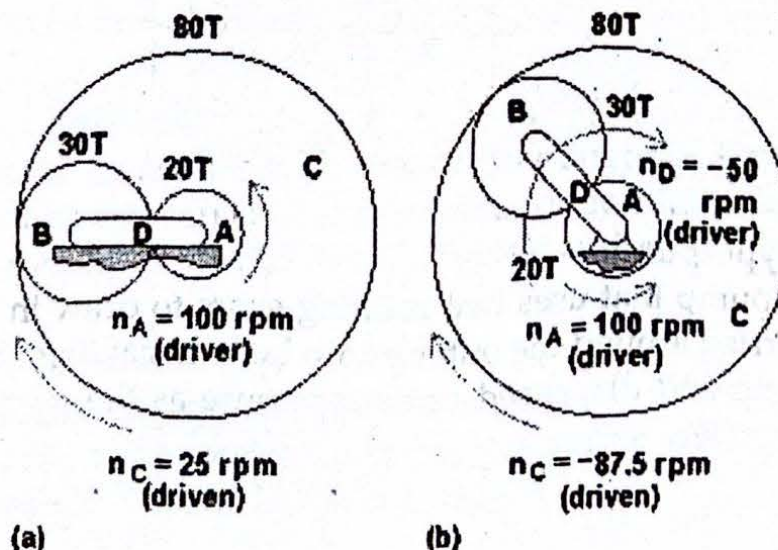
1. A floor- or steering-wheel-mounted lever used to manually change gears in the transmission.
2. A linkage-type mechanism by which the gears in a transmission are engaged.

Gear train

combination of two or more gears used to transmit motion between two rotating shafts or between a shaft and a slide. In theory two gears can provide any speed ratio in connecting shafts at any center distance, but it is often not practical to use only two gears. If the ratio is large or if the center distance is relatively great, the larger of the two gears may be excessively large. Moreover, an additional gear may be necessary simply to give the proper direction to the output gear. Belt, rope, and chain drives are frequently used in conjunction with gear trains. See also: Belt drive; Chain drive; Planetary gear train Classification

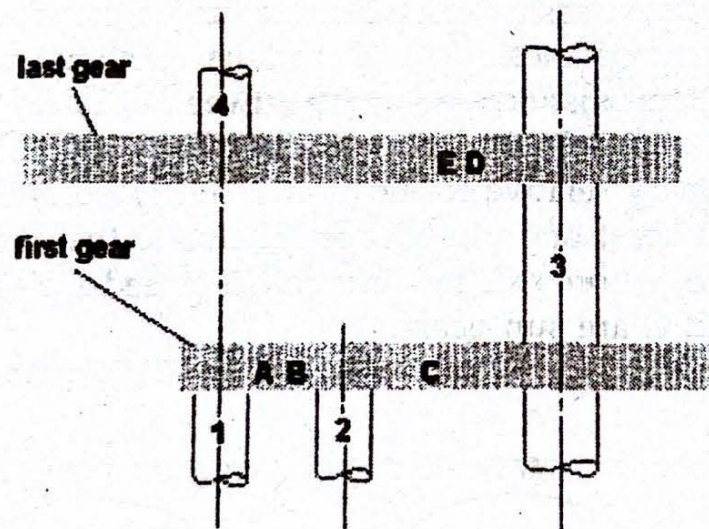
Gear train classifications include simple, compound, reverted, epicyclic (planetary), and various combinations. The most important distinction is that between ordinary and epicyclic gear trains. In ordinary trains (Fig. 1a), all axes remain stationary relative to the frame. But in epicyclic trains (Fig. 1b), at least one axis moves relative to the frame. In Fig. 1b gear B, whose axis is in motion, is called a planet. The gears A and C are sun gears.

Fig. 1 Gear trains. (a) Ordinary. (b) Epicyclic.



An ordinary gear train is a single degree of freedom mechanism: A single input, such as an input to gear A of the train in Fig. 1a, suffices to control the motions of the other moving members. But an epicyclic gear train (Fig. 1b) has two degrees of freedom: Two inputs are necessary. In the epicyclic train of Fig. 1b, the two input members are gear A and the planet carrier, link D. Only if both these members are controlled by external agencies can the motions of gears B and C be predicted. Frequently one gear of an epicyclic train is fixed. This then is one of the input members with a velocity of zero revolutions per unit time. A simple gear train is one in which each gear is fastened to a separate shaft (Fig. 1a). If at least one shaft has two or more gears fastened to it (Fig. 2), the train is compound. The train of Fig. 2 is also a reverted gear train, because the input and output shafts are in line. If the input shaft is not in line with the output shaft, the train is nonreverted.

Fig. 2 Compound reverted gear train.



gear-type pump

A pump that uses two rotating gears to draw in fluid that is carried around the outer pump body in cavities between gear teeth and dispensed under pressure as the gear teeth mesh together.