Pinion

The main axis, known as the king pin, is found in the steering machinery of a forklift. The very first design was a steel pin which the movable steerable wheel was connected to the suspension. Able to freely turn on a single axis, it restricted the levels of freedom of motion of the rest of the front suspension. In the 1950s, the time its bearings were replaced by ball joints, more detailed suspension designs became available to designers. King pin suspensions are still featured on various heavy trucks since they could lift much heavier cargo.

New designs no longer restrict this particular machine to moving like a pin and these days, the term may not be used for an actual pin but for the axis in the vicinity of which the steered wheels turn.

The kingpin inclination or also called KPI is also called the steering axis inclination or SAI. This is the explanation of having the kingpin put at an angle relative to the true vertical line on the majority of recent designs, as viewed from the back or front of the lift truck. This has a vital impact on the steering, making it tend to go back to the centre or straight ahead position. The centre arrangement is where the wheel is at its highest point relative to the suspended body of the forklift. The motor vehicles weight has the tendency to turn the king pin to this position.

Another effect of the kingpin inclination is to arrange the scrub radius of the steered wheel. The scrub radius is the offset between the tire's contact point with the road surface and the projected axis of the steering down through the king pin. If these items coincide, the scrub radius is defined as zero. Even if a zero scrub radius is possible without an inclined king pin, it needs a deeply dished wheel in order to maintain that the king pin is at the centerline of the wheel. It is a lot more practical to incline the king pin and utilize a less dished wheel. This likewise provides the self-centering effect.