1. **Open Die Forging**: Flat dies of simple shape are used.

   ![Open Die Forging](image)

   **Fig. Open Die Forging**

   **Features of open die forging:**
   - Repeated impact blows are given on the work
   - Less dimensional accuracy
   - Suitable only for simple shapes of work
   - Requires more skill of the operator
   - Usually used for a work before subjecting it to closed die forging (to give approximate shape)
   - Dies are simple and less expensive
   - It can be analyzed much easily
   - It is the simplest of all forging operations

2. **Closed Die Forging**:

   Work piece is deformed between two dies with impressions (cavities) of the desired final shape on them.
Features of Closed Die Forging:

Closed die forging involves two or more steps:

- **i) Blocking Die:** Work is rough forged, close to final shape.
- **ii) Finishing Die:** Work is forged to final shape and dimensions.
- Both Blocking Die and Finishing Die are machined into the same die block.
- More number of dies are required depending on the complexity of the job.
- Two die halves close-in & work is deformed under high pressure.
- High dimensional accuracy / close control on tolerances.
- Suitable for complex shapes.
- Dies are complex and more expensive.
- Large production rates are necessary to justify high costs.

Significance of Flash in Closed Die Forging:

- Excess metal is taken initially to ensure that die is completely filled with metal to avoid any voids.
- Excess metal is squeezed out of the die cavity as a thin strip of metal, called flash.
- A flash gutter is provided to reduce the area of flash.
  - Thin flash increases the flow resistance of the system & builds up the pressure to high values which ensures that all intricate shapes of cavity are filled.
  - Flash design is very critical and important step in closed die forging.
  - Extremely thin flash results in very high pressure build up which may lead to breaking of the dies.

Fig. Closed Die Forging

Source: [http://elearningatria.files.wordpress.com/2013/10/mp3_unit3_forging_final.pdf](http://elearningatria.files.wordpress.com/2013/10/mp3_unit3_forging_final.pdf)