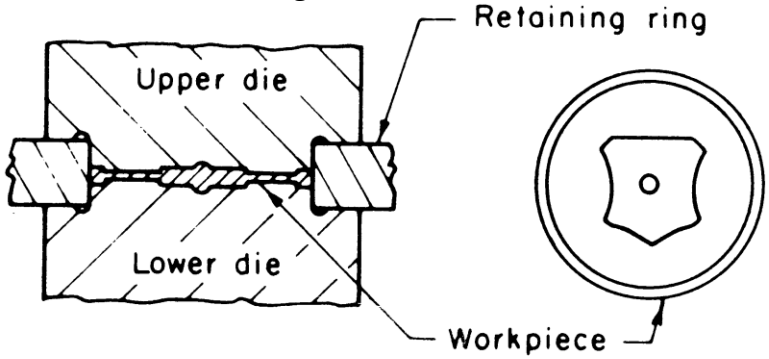
Types of Forging III and defects in forging

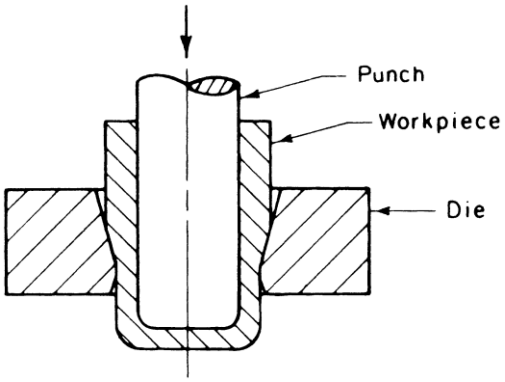
Coining

In sheet metal working, coining is used to form indentations and raised sections in the part. During the process, metal is intentionally thinned or thickened to achieve the required indentations or raised sections. It is widely used for lettering on sheet metal or components such as coins. Bottoming is a type of coining process where bottoming pressure causes reduction in thickness at the bending area.



Ironing

Ironing is the process of smoothing and thinning the wall of a shell or cup (cold or hot) by forcing the shell through a die with a punch.



Equipment. Mechanical presses and hydraulic presses.
Materials. Carbon and alloy steels, aluminum and aluminum alloys, titanium alloys.
Applications. Shells and cups for various

Swaging

Uses hammering dies to decrease the diameter of the part

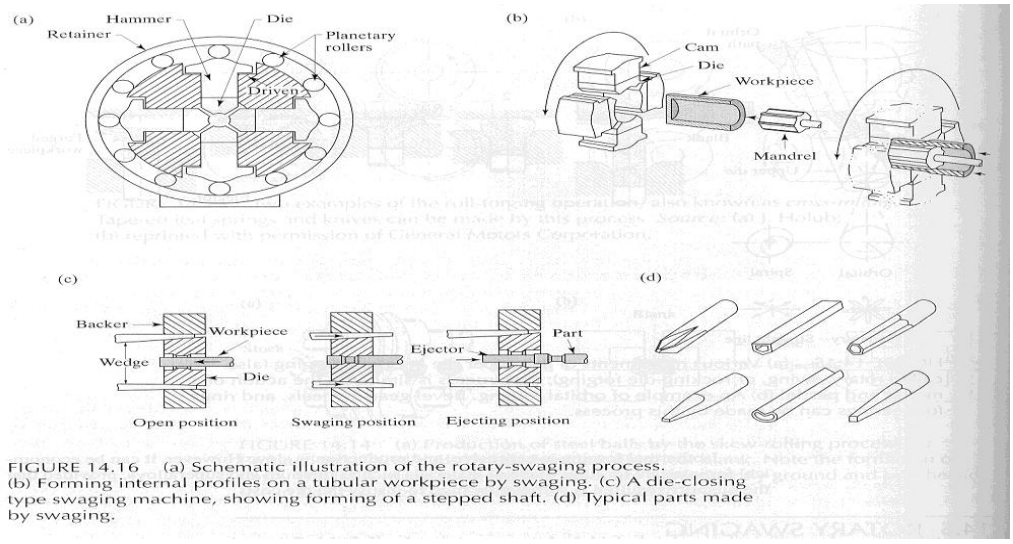
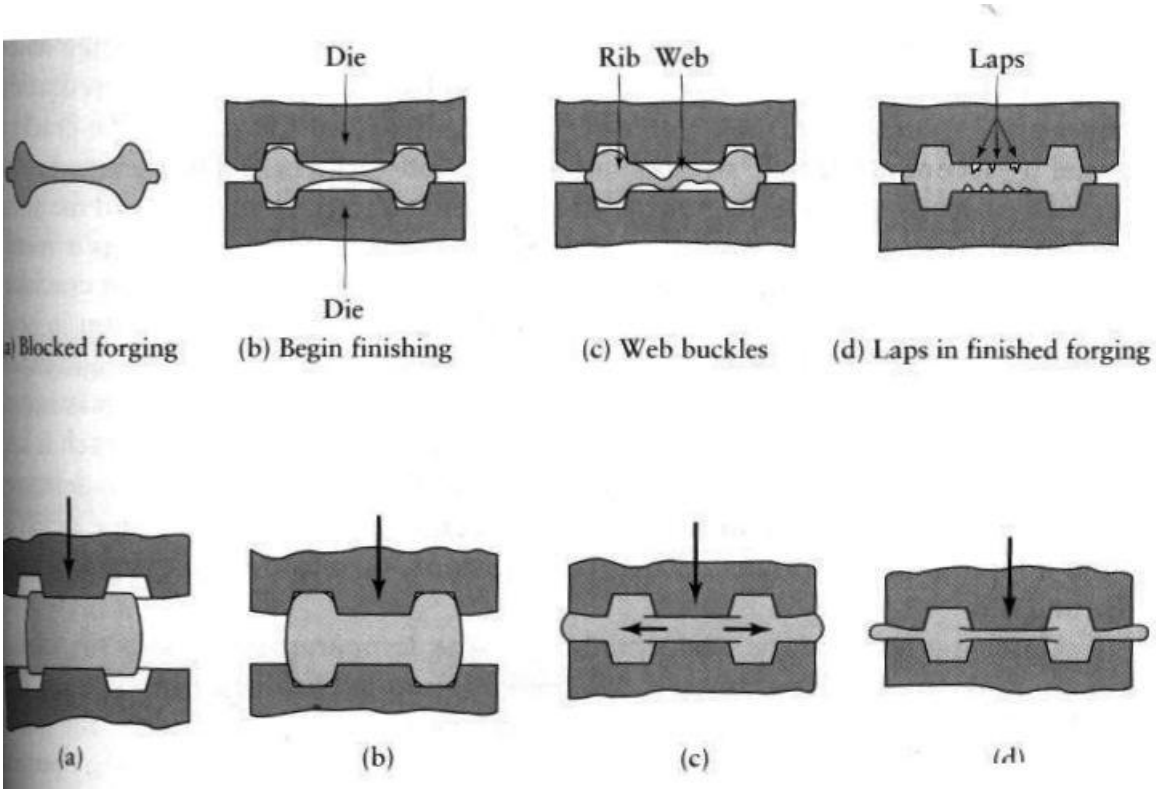


FIGURE 14.16 (a) Schematic illustration of the rotary-swaging process. (b) Forming internal profiles on a tubular workpiece by swaging. (c) A die-closing type swaging machine, showing forming of a stepped shaft. (d) Typical parts made by swaging.

Defects in Forging



Extrusion and Drawing Processes

Extrusion

Process by which long straight metal parts can be produced.
Cross-sections that can be produced vary from solid round, rectangular, to L shapes, T Shapes, tubes and many other different types
Done by squeezing metal in a closed cavity through a die using either a mechanical or hydraulic press.
Extrusion produces compressive and shear forces in the stock.
No tension is produced, which makes high deformation possible without tearing the metal.
Can be done Hot or cold

Drawing

Section of material reduced by pulling through die.
Similar to extrusion except material is under TENSILE force since it is pulled through the die
Various types of sections: - round, square, profiles

Tube Drawing

Utilizes a special tool called a MANDREL is inserted in a tube hollow section to draw a seamless tube

- Mandrel and die reduce both the tube's outside diameter and its wall thickness. The mandrel also makes the tube's inside surface smoother

Source : http://nprcet.org/e%20content/mech/MT.pdf