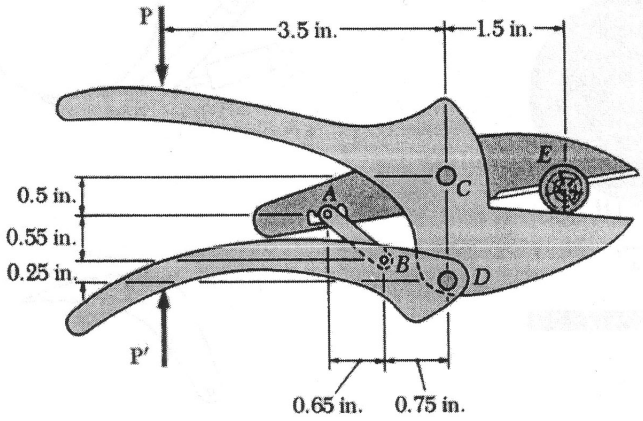
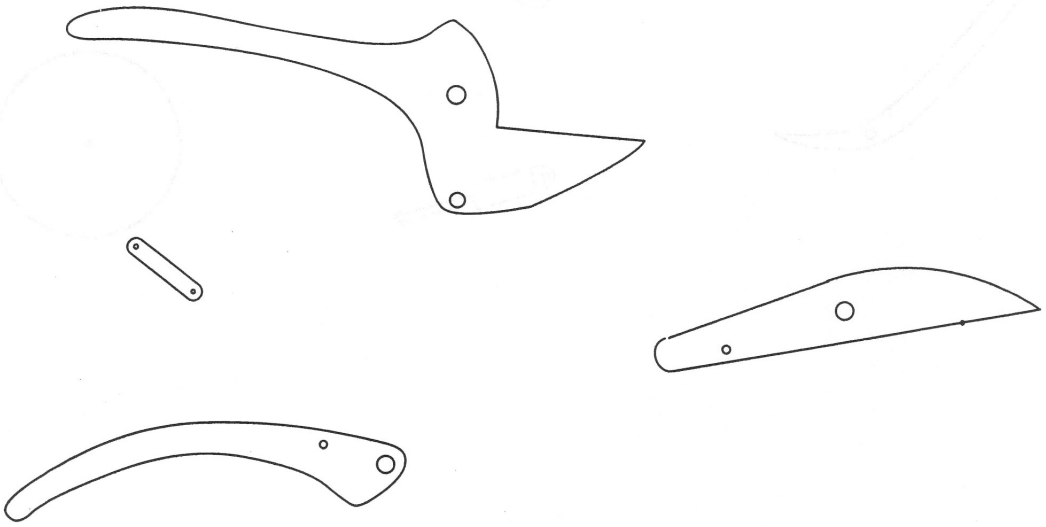
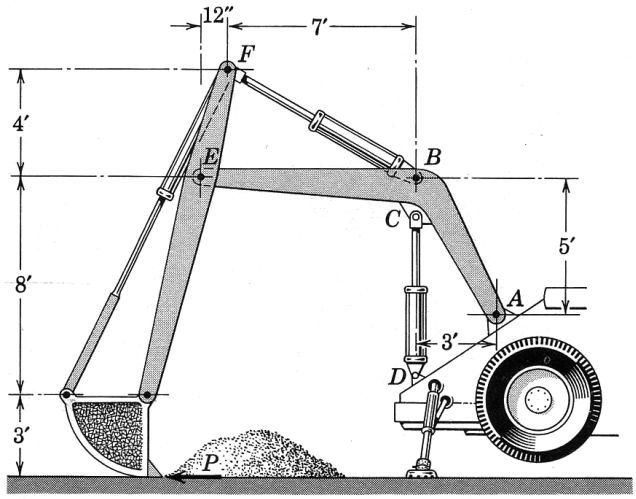
3. (6.116) The compound-lever pruning shears shown can be adjusted by placing pin *A* at various ratchet positions on blade *ACE*. Knowing that 300-lb vertical forces are required to complete the pruning of a twig, determine the magnitude *P* of the forces that must be applied to the handle when the shears are adjusted as shown.





P = 29.4 lb

4. The back hoe is controlled by three hydraulic cylinders, and in the particular position shown, the hoe can apply a horizontal force $P = 2000$ lb. Neglect the weights of the members and compute the forces supported by the pins at A and E.



$A = 4470$ lb, $E = 7350$ lb