**Fig. 16.80** Centering Rest. (1) Draw details. (2) Draw assembly. If assigned, complete with dimensions.

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**Fig. 16.81** Pipe Vise. (1) Draw details. (2) Draw assembly. To obtain dimensions, take distances directly from figure with dividers; then set dividers on printed scale and read measurements in millimeters or decimal inches as assigned. All threads are general-purpose metric threads (see Appendix 15) or Unified coarse threads except the American National Standard pipe threads on handle and handle caps.
Design and Working Drawing Problems

Fig. 16.82 Tap Wrench. (1) Draw details. (2) Draw assembly. If assigned, use unidirectional two-place decimals for all fractional dimensions or redesign for metric dimensions.

Fig. 16.83 Machinista's Vise. (1) Draw details. (2) Draw assembly. If assigned, use unidirectional two-place decimals for all fractional dimensions or redesign for metric dimensions.

Fig. 16.84 Screw Jack. (1) Draw details. See Fig. 16.23, showing "box-in" views on Sheet Layout A-657 or A2-678 (see inside back cover). (2) Draw assembly. If assigned, convert dimensions to decimal inches or redesign for metric dimensions.
Fig. 16.55 Stock Bracket for Cold Saw Machine. (1) Draw details. (2) Draw assembly. If assigned, use unidirectional decimal dimensions or redesign for metric dimensions.

Fig. 16.56 Front Circular Forming Cutter Holder. (1) Draw details. (2) Draw assembly. To obtain dimensions, take distances directly from figure with dividers and set dividers on printed scale. Use metric or decimal-inch dimensions as assigned.
Fig. 16.87 Machine Vise.  (1) Draw details.  (2) Draw assembly.  If assigned, convert dimensions to the decimal-inch system or redesign with metric dimensions.