

## PRINCIPLES OF GUARDING

dimensions shown centered on the travel line in Fig 22-17. Outline the guard sections, giving the required opening between sections. (One edge of each section will touch a clearance line, the other will touch the safe opening layout at the proper point to give the required opening.) Determine the necessary dimensions for properly locating the guard from this final layout. The width of the guard sections can also be determined in addition to locating dimensions.

4. Before the guard is put in operation, check carefully for hand travel under the guard, stability of mounting, and rigidity of construction.

*Inrunning rolls—stock traveling over one roll before entering nip zone* Fig. 22-21 shows an inrunning roll nip where the stock travels over a portion of one roll before entering the nip. The stock in such an arrangement is fed either under or over a barrier.

To design a properly placed barrier guard under such conditions, it is suggested that the following procedure be used:

1. Draw a full-scale outline of the nip zone with the travel line of the stock indicated on the roll. Indicate the clearance line on the top roll. If more than a  $\frac{1}{8}$ -in. clearance is required, the top edge of the guard should be located in accordance with the safe opening layout.
2. Determine distance S—the distance of the center line of the roll to the point where there is a  $\frac{1}{8}$ -in. space between the rolls.
3. At this distance begin the layout (on the roll with the stock travel) of the safe opening dimensions, as shown in Fig 22-17. (Layout can be made on roll sur-

face with  $\frac{1}{8}$ -in divider steps.) Outline the guard section (one edge touching clearance line and the other touching the safe opening layout at the proper point to give the required opening.) Determine the necessary dimensions for properly locating the guard from this final layout. The width of the guard can also be determined in addition to locating the dimensions.

4. Before the guard is put in operation, check carefully for hand travel under the guard, stability of mounting, and rigidity of construction.

### Guard construction

To assure maintenance of the dimensions established for safe openings, it is important that the guards be constructed to minimize the possibility of distortion or movement which would destroy the effectiveness of the guard. All guard parts should be strong enough to withstand expected stress. Fastenings should be secure and of such design as to prevent the guard proper from shifting. Any guard with openings over  $\frac{1}{4}$  in. should be considered more or less a "precision" construction and checked frequently for alignment and condition.

Depending upon the need for visibility and rigidity and the method of feeding for a particular guard, the designer can use the layouts shown in Figs 22-19, 22-20, and 22-21 to select the guard sections best suited to his needs.

Figs 22-22 and 22-23 show typical guard designs for a roll nip with and without a feed table. Working from a layout similar to this one, the designer can determine the location, size, and shape of the necessary guard section to meet his particular requirements.

## References

- American Standards Association, 10 East 40th St., New York City  
*Safety Code for Floor and Wall Openings, Railings, and Toe Boards.* A12  
*Safety Code for Mechanical Power-Transmission Apparatus* B15.1
- National Association of Mutual Casualty Companies, 20 North Wacker Dr., Chicago, Ill. *Safe Openings for Some Point of Operation Guards* Technical Guide for Accident Prevention No 2, January 1949.
- Royal Society for the Prevention of Accidents, London, England. *Industrial Accident Prevention Bulletin*. Vol. II, No. 118, February 1943.
- U.S. Department of Commerce, National Bureau of Standards, Washington, D.C. *National Electrical Safety Code*.
- U.S. Department of Labor, Washington, D.C.  
*Safety Subjects*. Bulletin No. 67.  
*The Principles and Techniques of Mechanical Guarding* Bulletin No 197.