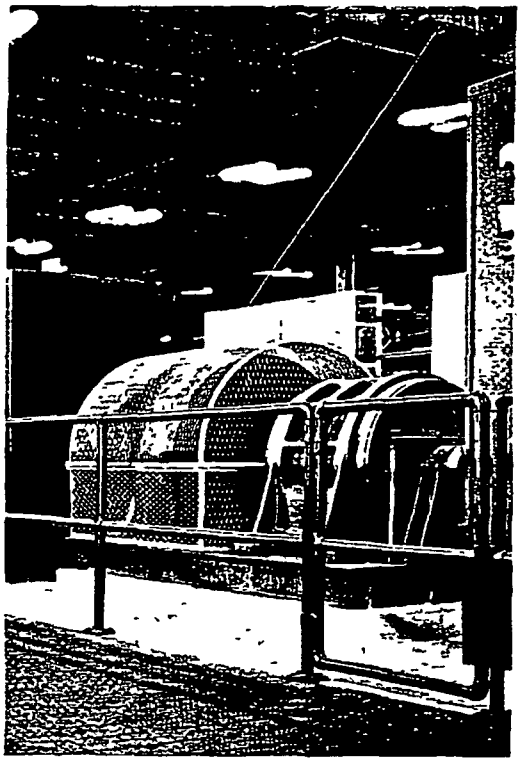


FIG 33-1 — Expanded metal cover, guard rails, and substantial gate guard this equipment Arrangement encourages easy maintenance

conductors is reduced to a minimum

When an interlock is used as a safety device, it should be fail-safe, that is, steps must be taken to assure that failure of this device will not jeopardize the safety of personnel depending upon it Interlocks selected should meet the following standards

1 Fail-safe features Failure of the interlock mechanism, loss of power, short circuit, or malfunction of equipment will cause the circuit to be interrupted

2 A visible disconnect in the primary power circuit

3 An arrangement which makes attempts to circumvent the interlock impractical

Where space and operating requirements permit, electrical equipment should be placed in the less congested areas of the plant or, where practicable, in special rooms to which only authorized persons have access If this equipment must be located in the production areas of the plant, enclosures should be built around those parts of the equipment having exposed conductors

Barriers prevent accidental contact with electrical equipment (Fig 33-1) Frames may be made of wood, rolled metal shapes, angle iron, or pipe Wood strips, sheet metal, perforated metal, expanded metal, wire mesh, or plastic or shatterproof transparent material may be used for filler Dry wood and many plastics have the advantage of being nonconductors But unless specially treated, wood is flammable and may be objectionable on that account Metal frames or guards should be grounded

In addition, warning signs should be displayed near exposed current-carrying parts and in especially hazardous areas, such as high-voltage installations These signs should be large enough to be read easily and should be visible from all approaches to the danger zone

In many respects, standard machine guarding practices can be applied to electrical equipment (See Chapter 24 for a discussion on construction of transmission guards) There are, however, certain hazards peculiar to electricity which must be given consideration when the overall plant guarding program is planned

Wiring should be installed in accordance with the *National Electrical Code* unless more restrictive local requirements apply

The type of wiring that should be used in an industrial plant depends upon the type of building construction, the size and distribution of electrical load, exposure to dampness or corrosive vapors, location of equipment, and various other factors For most plant conditions, grounded rigid metal conduit is satisfactory

Among wiring methods which may be used under certain circumstances are armored cable, nonmetallic sheathed cable, flexible metal conduit, raceways, open wiring and insulators, and concealed knob and tube wiring When new installations are made or existing circuits changed, applicable requirements of national and local wiring codes should be observed