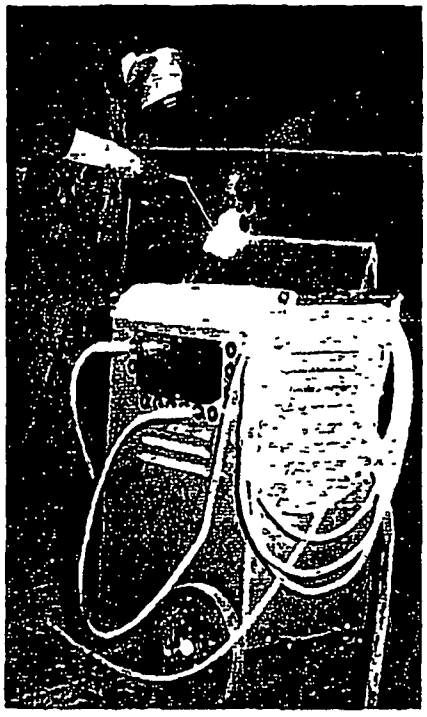

Fig 29-6. One conductor of a three conductor primary cable is permanently connected to the case of this AC welding unit and to the ground prong of a three-prong polarized plug, thus making grounding of the case both sure and easy

Courtesy Illinois Central Railroad

voltage, not exceeding 120 volts

3 Stored energy equipment (capacitor discharge or resistance welding) having control panels involving high voltage (over 550 volts) should be completely enclosed Doors should have locks and contacts wired in the control circuit to short circuit the capacitors when door or panel is opened A manually operated switch will serve as an additional safety measure, assuring complete discharge of the capacitors

4 Back doors of machines and panels should be kept locked or interlocked to prevent tampering

5 A fused safety switch or circuit breaker should be located conveniently near the welding machine so that power supply circuits may be opened before a man services the machine and its controls.

6 The point-of-operation hazard should be eliminated by suitable guards Enclosure guards, gate guards, two-hand controls, and similar standard guards as designed for punch press operations are applicable

7 A *flash welding machine* should have a shield or hood to control flash and fumes, and a ventilating system to carry off the metallic dust and oil fumes.

8 Where flying sparks are not confined, the operators and nearby persons should be protected by shields of safety glass or other transparent material

9 Foot switches, air or electrical, should be guarded to prevent accidental operation

Arc Welding and Cutting

Arc welding is a process for joining metals by heating with an electric arc or arcs with or without the application of pressure and with or without the use of filler metal The process includes shielded welding which uses gas or a solid flux to blanket the weld Arc welding is used to fabricate nearly all types of carbon or alloy steels, the common nonferrous metals and is indispensable in the repair and reclamation of metallic machine parts

Arc cutting is used only for rough cuts or for scrapping because of the unevenness of the cut obtained It has been used for underwater cutting in salvaging operations Oxy-arc or arc-oxygen cutting is used for finer cutting and is especially useful for cutting metals that do not oxidize readily

For arc welding or cutting, two welding leads, the electrode lead and the work lead, are required from the source of current supply Usually, one lead is connected to the work and the other to the electrode holder The work lead (cable) is the most satisfactory means of providing the return (ground) circuit to the welding machine (Fig 29-6), but in some cases operating conditions may require the use of a grounded steel structure

Power supply

Either AC or DC may be used for arc welding or cutting of any kind, including