

Fig. 11 represents an arc furnace in which the material D, to be heated, forms one pole of the arc. A is a chamber lined with refractory material, and B and C are the two electrodes; the upper one, B, is movable; the lower, C, is fixed, forming part of the bottom of the furnace, and making electrical contact with the charge D. The furnace is started by lowering B until it touches D, thus allowing the current to pass. B is then raised, forming an electric arc between B and D.

Siemens' vertical arc furnace, Fig. 2, Willson's carbide furnace, Fig. 7, and Heroult's steel furnace, are examples of this

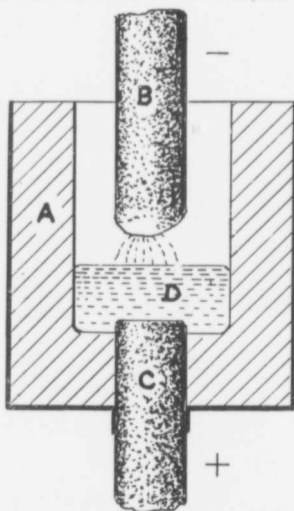


Fig. 11.—Direct Heating Arc Furnace.

class. The Heroult steel furnace, Fig. 23, p. 87, consists of a chamber for containing the molten steel, with two vertical carbon rods dipping through holes in the roof. An arc is formed between each carbon rod and the fused charge; the current entering through one rod, passing through the melted steel and slag, and returning through the other rod. Furnaces of this class are rather less convenient for scientific investigations than the independent arc furnace; because the temperature is less easy to regulate, the