

is to be heated directly by the passage of the current, may be either solid or liquid, and in the case of a liquid charge, the electric current may produce heat merely, or may also produce electrolysis.

The following classification is based on these considerations, and includes examples of each class.

Arc Furnaces.

The heat is produced by one or more electric arcs.

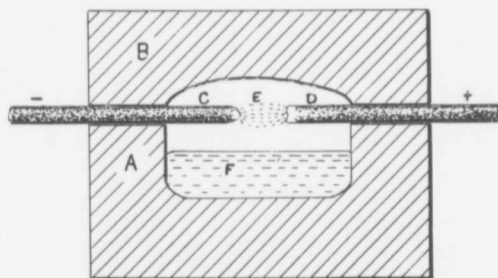


Fig. 10.—Independent Arc Furnace.

(1) **Independent arc furnaces.**—The arc is independent of the charge to be heated; being formed between two or more movable electrodes. The charge is heated by radiation from the arc, which is usually horizontal.

Fig. 10 shows such a furnace, consisting of a refractory chamber, A.B., in which an arc, E, is formed between the movable carbon electrodes C and D; the material to be heated being shown melted at F.

Moissan's furnace, Fig. 6, Siemens' horizontal arc furnace, Fig. 3, and Stassano's steel-making furnace are examples of this class. The Stassano furnace, Fig. 37, p. 130, consists of a chamber lined with magnesia bricks, and provided with three carbon electrodes, between which a three phase arc plays. The ore or other material is placed in the chamber below the level of the arc, and is heated by radiation.

(2) **Direct heating arc furnaces.**—The charge in the furnace forms one pole of the arc and is thus heated directly as well as by radiation. The arc is usually vertical.