One of the most important considerations is the durability or life of the apparatus. Consideration should be given to the thickness of the metal in each heater, the provisions made for expansion and contraction, and the protection afforded the firebox at the point of most intense heat.

A heater made of thicker metal than others usually will give greater length of service, other things being equal.

Proper provisions for expansion and contraction are imperative. Without such provisions a cast-iron heater is likely to crack and a steel heater is likely to warp and buckle.

Most furnaces have linings around the periphery of the fuel bed to protect the firebox from the action of the hottest part of the fire. The linings are removable and are as easily installed as new grates.

TABLE 1. AIR VELOCITIES AND REGISTER TEMPERATURES FOR FAN-FURNACE SYSTEMS

Type of Building	Velocities in Feet per Minute							Register Temperature
	Thru Free Area of Heaters	In Horizontal Supply Ducts	In Supply Risers	Into Room	In Vent Outlets	In Vent Risers	In Horizontal Vent Ducts and Recirculating Ducts	
Schools	800 to 1000	800 to 1000	500 to 600	300 to 400	300 to 400	500 to 600	600 to 800	90° to 120°
Churches	800 to 1000	700 to 900	400 to 600	300 to 500	300 to 500	400 to 600	500 to 700	80° to 120°
Auditoriums and Convention Halls	800 to 1000	800 to 1000	500 to 600	300 to 500	300 to 500	500 to 600	600 to 800	80° to 120°
Garages and Industrial Buildings	1000 to 1400	1000 to 1400	600 to 1000	400 to 1000	400 to 600	600 to 1000	800 to 1200	80° to 140°

Arrangement of Heaters

Any number of furnaces may be set in battery; all to be enclosed by an outer casing consisting of either masonry or of some form of insulated metal. This casing provides space under the heaters for air supply and forms a plenum space above the furnaces from which ducts may lead to the rooms requiring heat.

The fan preferably is placed at the rear of the heaters to secure equal air distribution over the heating surfaces. It is considered best practice to blow air around the heaters rather than to draw the air around them by suction, and most fan furnaces are designed for this arrangement.

The fan-furnace system can be applied readily to each of the following standard duct systems or to any combination thereof:

1. The straight fan-blast trunk-line system carrying heated air only for a series of rooms on any one run.

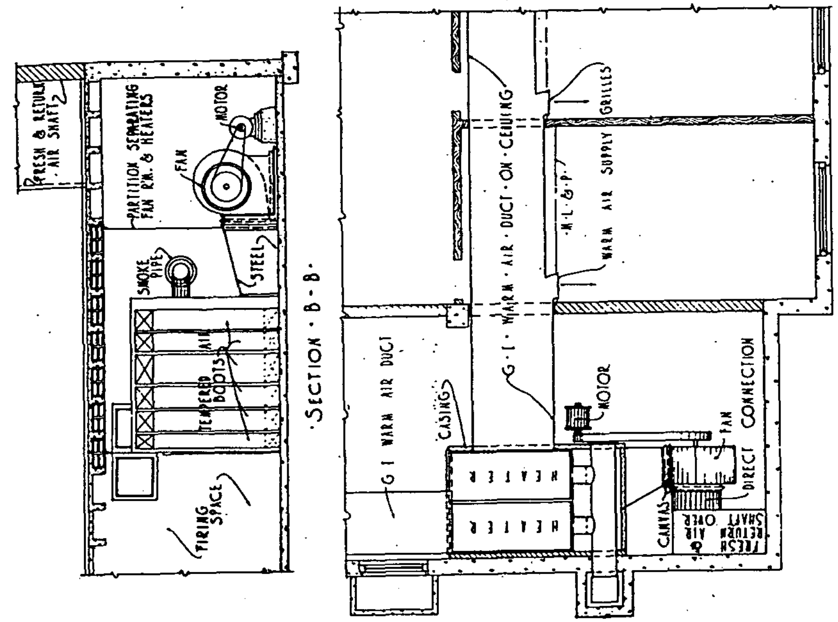

FIG. 3. FAN FURNACE WITH SINGLE DUCT

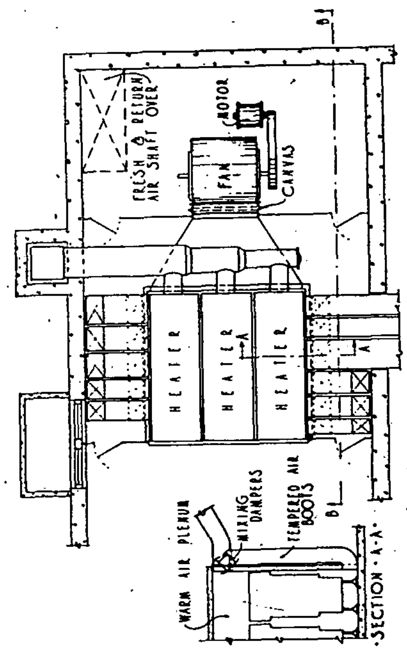

FIG. 1. FAN FURNACE WITH INDIVIDUAL DUCTS

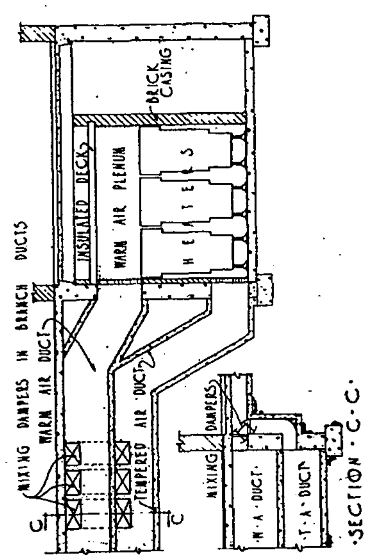

FIG. 2. FAN FURNACE WITH DOUBLE DUCTS