

9. Automatic humidity control by air washers, sprays, etc.
10. Connection to various distributing systems.
 - a. Straight hot blast trunk line system carrying heated air only.
 - b. Double duct system furnishing warm air in one duct and tempered air in the other; or
 - c. Individual duct system with separate duct to each room with mixture at furnace casing.
11. Connection to various exhaust or recirculating systems.
 - a. Corridor ventilation to atmosphere or to recirculation opening;
 - b. Exhaust from each room through vent ducts;
 - c. Recirculation through openings as separate points for return; or
 - d. Separate returns from each room to fan for recirculation.

The fan is placed so as to secure equal distribution of air over heating surfaces. It is considered the best practice to blow air around heaters rather than to draw the air around them by suction. To reduce the velocity of air through heaters, wider spacing of the casing is practical, if proper provision for air contact over heated surfaces is arranged. Smoke breechings should be short and are sometimes used within heater casing to increase heating surface. Smoke breechings placed in rooms below atmospheric pressure (suction side) should be avoided.

For all plants a warm-air plenum chamber thermometer, of extension type, indicating the temperature of the air leaving the heater, is of great assistance for proper operation.

Humidifying pans connected to an outside water supply and regulated by a float-valve mechanism frequently are used for humidification. Water sprays may readily be placed at a central source.

The use of air washers as heat transfer agents in conjunction with refrigeration installations is practical with this system for summer cooling, as with other mechanical ventilating plants. All styles of air filters not depending on water are well adapted to use with fan-furnace plants.

SELECTION OF HEATERS

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.

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.

Power costs affect the decision as to the allowable free area and static resistance of the system. The thermal efficiencies of the various makes of heaters should be given consideration in case the fuel to be burned is relatively high in cost. First cost and fuel economy are items that also bear on the type of furnace casing to be employed.

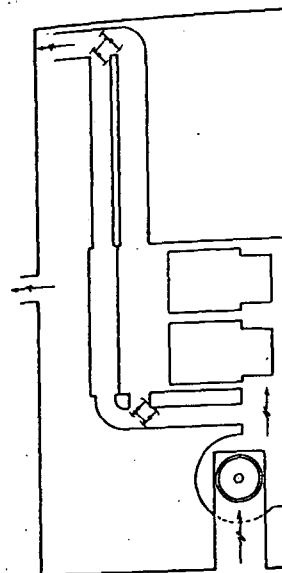


FIG. 6. HEATER ARRANGED TO USE OUTSIDE AIR, WITH TEMPERED AIR CHAMBER ABOVE WARM AIR CHAMBER SHOWING DOUBLE DUCT DISTRIBUTING SYSTEM AND MIXING DAMPERS AT BASE OF RISERS

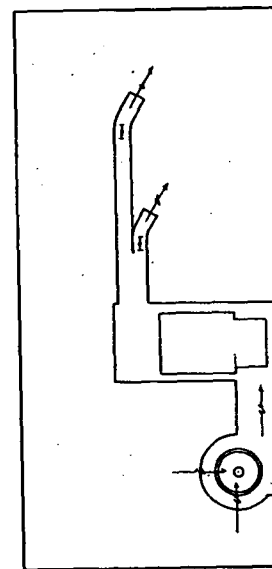


FIG. 8. HEATER ARRANGED FOR RECIRCULATION WITH TRUNK LINE DISTRIBUTING SYSTEM SHOWING TEMPERATURES CONTROL BY AIR VOLUME AT OUTLET, OR DIRECT ON HEATER

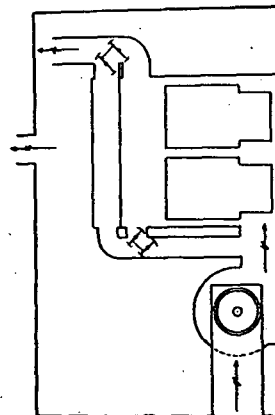


FIG. 5. HEATER ARRANGED TO USE COMPLETE OUTSIDE AIR WITH TEMPERED AIR CHAMBER ABOVE WARM AIR CHAMBER SHOWING MIXING DAMPER TO TEMPER AIR, ALSO MIXING DAMPER TO DUCT FROM WARM AND TEMPERED AIR CHAMBERS

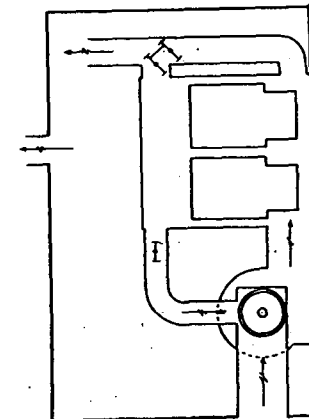


FIG. 7. HEATER ARRANGED FOR OUTSIDE AIR WITH WARM AIR CONNECTION TO FAN INLET TO TEMPER AIR, ALSO MIXING DAMPERS FROM WARM AIR AND TEMPERED AIR CHAMBERS