

TYPICAL ARRANGEMENTS OF APPARATUS

A very common arrangement of the fan steam system of heating is illustrated by Fig. 2. The arrangement consists of a fan, indirect heater unit enclosed by a sheet-metal casing connected with the suction side of the fan, a sheet-metal casing connected to the heater casing run to the outside of the building and provided with an adjustable opening inside the building for recirculation of the air when desired, and a duct system attached to the fan outlet to convey and distribute the air to various parts of the building to be warmed by the apparatus. The fan is ordinarily motor-driven; there are, however, many cases when a direct-connected steam engine may be used to advantage. In this event the exhaust from the

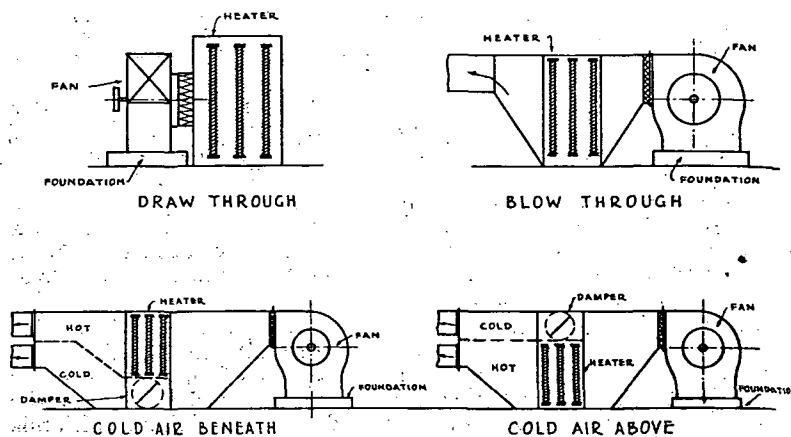


FIG. 1. STANDARD ARRANGEMENTS FOR HEATER AND BY-PASS

engine can be connected to one or more sections of the heater, depending upon the condensation rate of the engine. The recirculation duct connected with the opening in the suction duct, should be extended to a point as near the floor as possible.

When ventilation is not a requirement or is considered relatively unimportant, as in shop and factory heating, and the number of persons vitiating the air is small compared with the cubical contents of the building or the process does not generate obnoxious gas or vapors, the air may be recirculated, sufficient outside air for ventilation being supplied by infiltration. The amount of heat to be supplied the heater in this case is the same as would be required for a direct radiation installation.

When ventilation is a requirement to be met, an arrangement similar to that shown by Fig. 2 may be employed. Since the amount of air necessary for heating is generally in excess of the amount required for ventilation, considerable fuel economy may be effected by recirculating a portion of the air. In this case only sufficient outside air is drawn into the system to meet the ventilation requirement and the remainder of the

air, required for heating, is recirculated. This may be readily effected by an arrangement of ducts and dampers on the suction side of the fan as previously mentioned. If the outside air introduced is to be washed or conditioned the washer or humidifier and tempering coil may be added between the inlet for the recirculated air and the fresh air intake. (See Chapters 28 and 29).

The draw-through apparatus is employed on account of its compactness as well as the advantage gained by connecting the fan directly to the

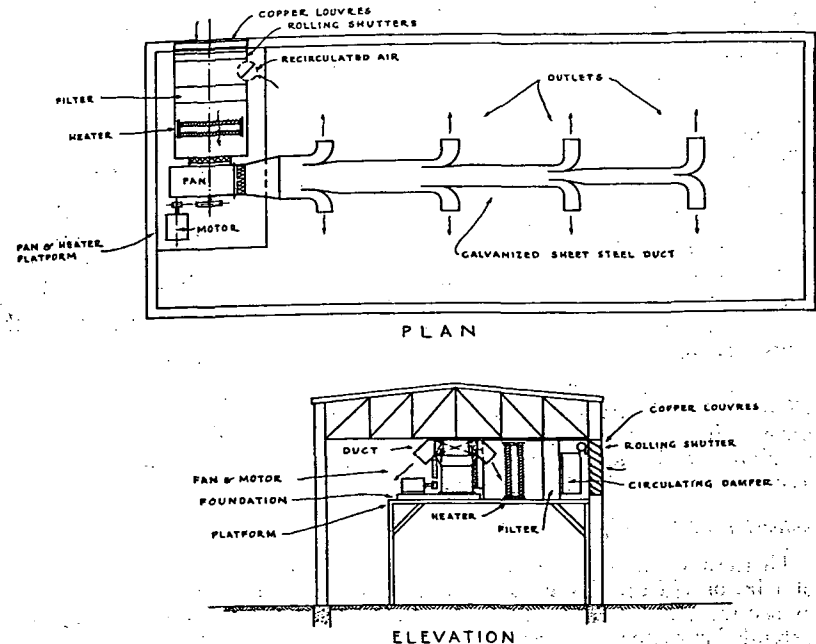


FIG. 2. COMMON ARRANGEMENT OF A FAN STEAM HEATING SYSTEM FOR A SHOP BUILDING

pipings system. In this case the temperature of the air delivered will be the same to all parts of the building. The blow-through apparatus, Fig. 1, is sometimes used where different temperatures and independent temperature regulation are required for different rooms of the building. Modern practice, however, seems to favor the draw-through system, delivering the air to all rooms at the same temperature, and taking care of varying temperature requirements by the use of booster coils located in the various ducts. The use of the bypass around the heating coils permits the mixture of hot and cold air in any desired proportions, by the use of a mixing damper at the point where the two ducts from the heater, and from the bypass, join to form one duct leading to the room. In the case