The size and location of the vent[7] outlet is important. In many cases the sizes for public buildings are regulated by law, but the location of the vents generally is left to the discretion of the engineer.

Best results have been obtained with a velocity through the vent openings nearly equal to that at which the air is introduced into the room, thus maintaining a slight pressure in the room. Calculated velocities at the vent openings of from 600 to 800 fpm produce the best diffusion results from this system.

The cross-sectional area of the vent flue itself may be figured on the basis of 15 sq in. of flue for each 100 cfm. Thus the vent flue area of a flue for a room equipped with one 1200 cfm unit ventilating machine would be 180 sq in. The area of vent flue opening from the room may be figured on the basis of 25 sq in. per 100 cfm.

In school buildings provided with wardrobes or cloakrooms the vents may be so located that the air shall pass through these spaces, heating and ventilating them with air which otherwise would be passed to the outside

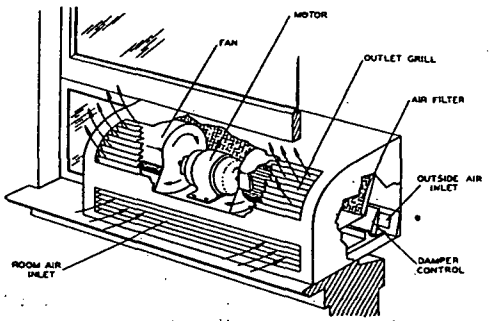

FIG. 9. TYPICAL WINDOW VENTILATOR

without being used to the best advantage. Many state codes for ventilation of public buildings make this arrangement mandatory.

There has been much controversy over the use of corridor ventilation in school building practice, one group holding the view that when each classroom has a separate vent flue there is a minimum fire risk and less likelihood of cross-contamination, while others emphasize the economy features of the corridor discharge and minimize the fire contamination, and other hazards.

WINDOW VENTILATORS

A window ventilator consists of filters and motor driven fans enclosed in a cabinet to be mounted on the window sill of homes or offices. These units accomplish ventilation, air cleaning, and air circulation. The direction of air discharge is manually adjustable for seasonal operation. Fig. 9 illustrates a unit of this type.

[7] A.S.H.V.E. RESEARCH REPORT No. 936—Investigation of Air Outlets in Class Room Ventilation, by G. L. Larson, D. W. Nelson, and R. W. Kubasta (A.S.H.V.E. TRANSACTIONS, Vol. 38, 1932, p. 463).

A.S.H.V.E. RESEARCH REPORT No. 1017—Air Supply to Classrooms in Relation to Vent Flue Openings, by F. C. Houghten, Carl Gutberlet, and M. F. Lichtenfels (A.S.H.V.E. TRANSACTIONS, Vol. 41, 1935, p. 279).

UNIT HUMIDIFIERS

A unit humidifier consists essentially of some type of equipment for adding moisture to the air, usually a fan to draw the air through the humidifier, and in some cases tempering coils and filters, all encased in a single cabinet. These units are generally used in conjunction with heating systems which do not provide the necessary humidification during winter operation.

In any type of unit humidifier, the process of adding moisture to the air requires heat from a heating coil, water, or air itself.

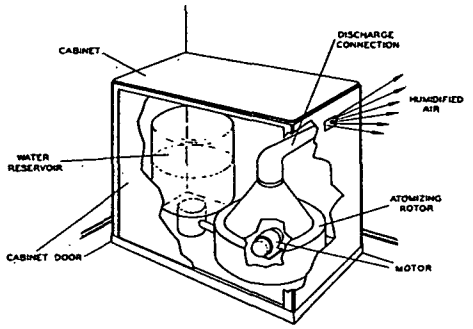

FIG. 10. TYPICAL UNIT HUMIDIFIER OF THE SPRAY TYPE FOR USE IN THE ROOM BEING HUMIDIFIED

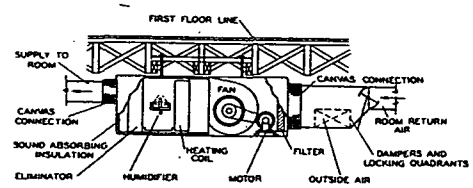

FIG. 11. TYPICAL UNIT HUMIDIFIER OF THE SPRAY TYPE WITH STEAM COIL TO PREHEAT THE AIR FOR RESIDENCES

Types of Units

Small unit humidifiers in decorative casings are made for applications where it is desired to place the unit directly in the room to be humidified. These units are usually of the atomizing type and are completely self-contained. The humidifier water is supplied by a reservoir which must be refilled at intervals. In most units the fine spray of water is mixed with some room air and the mixture is discharged directly into the room. The heat required for humidification in this method is obtained by transforming some of the sensible heat of the air to latent heat. A unit of this type is illustrated in Fig. 10.

Another type of small unit humidifier employs the principle of vaporizing the water by the direct application of heat. One method commonly used is to immerse an electric heating element in a reservoir of water