

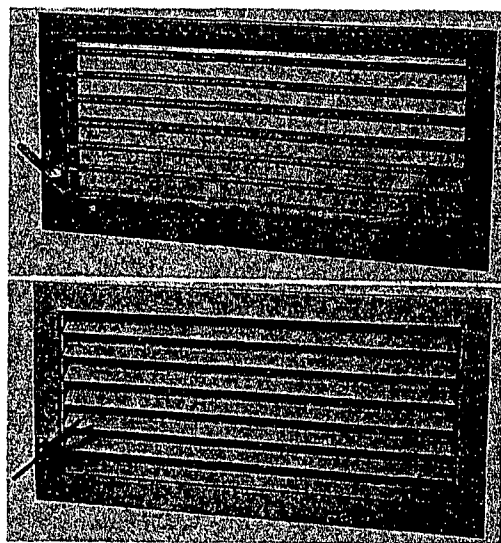


Figure 7. Grill for air-supply system showing adjustment of blades so air can be discharged horizontally (upper) or 45° downward (lower). (Courtesy Hart and Cooley Manufacturing Co., Holland, Mich.)

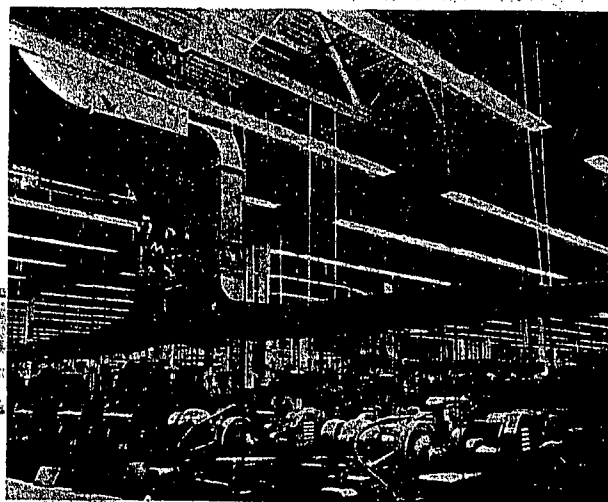


Figure 8: Air-supply system to deliver air into occupied zone.

and the temperature of the air is always to be above room temperature, the regulations set forth above under supplying heat can be followed. However, if it is desirable to bring the air in at less than room temperature to offset the heat gain from processes, greater care must be exercised to see that proper diffusion and air entrainment are maintained. If any smoke or fumes are generated in the room, it becomes more important to introduce this air as close to the actual occupied zone and as near the floor as is practical. In most installations the registers have been between 8 and 10 feet from the floor.

3. Removing Heat

Air Motion Only. When air is introduced into a space during warm weather for the purpose of reducing the effective temperature, the air motion is very important. The reduction of effective temperature is accomplished by the increased rate of heat loss by evaporation and convection from the body due to this air motion. Under such circumstances there does not seem to be agreement as to what velocities may be used. The effective temperature chart shows the limits of motion up to 700 feet per minute; however, many of the hot industries use air velocities of 3000 feet per minute and more (see Chapter XXI).

It has been found to be most desirable and effective to supply the air as near to the people as is practical. In this way the coolest air available is moved across them and at the same time the minimum amount of heat, smoke, and fumes is introduced in the air supply before it comes in contact with the occupants. Another advantage of supplying the air in this manner is that if the outside air temperature is reduced either by local storms or by the normal drop of temperature in the evening, the people inside immediately get the benefit. This is not true if the air is introduced at the ceiling of the building. In a number of plants air is introduced at the floor, either from tunnels or from duct work brought down to the floor level. This allows the air to be distributed around the people with an absolute minimum of smoke or heat entrainment. The selection of grilles for such an installation is of particular importance. They should be easily adjustable, preferably of the type that may be adjusted by the room occupants so that the air may be introduced directly on them when the building is hot and near them when outside temperatures are too cool for direct contact. It may be that the adjustment will be made two or three times a day depending on circumstances. One of the industrial grilles has been especially designed by one manufacturer to meet the above conditions. There are no dampers on these grilles to allow the employees to shut off the air supply, but they may be obtained with adjustable dampers if desired.

Evaporative Cooling. The same rules apply when supplying air from an evaporative cooler as when only air motion is desired. In fact, part of the time the water supply may be interrupted and the unit used only to supply air. The one thing that must be remembered with both of these methods is that large