MODIFICATIONS OF REMOTE UNITS

Features of various modifications of remote air conditioners are given in the following paragraphs.

Spray Type Unit

Fig. 4 shows a spray type unit used by designers who prefer air washing and coil wetting features. These units are equipped with a pump that sprays water or brine over the coils. Due to the direct mixing of the condensate and the spray, provision must be made for overflow in summer and replacement of water evaporated in winter.

Dehumidifying Units

In a further modification of spray type units, absorbent brine solutions such as lithium chloride are used to remove moisture from the air. As explained in Chapter 38, the latent heat of the moisture removed is changed to sensible heat, so that coils must be used as after-coolers to obtain the right dry-bulb temperatures. Factory produced units are also available for use with solid adsorbents such as silica gel.

Remote Room Units

For individual rooms, with cooling load requirements of $\frac{1}{2}$ to $1\frac{1}{2}$ tons, remote units are available in attractive casings for installation within the room. A suspended type is shown in Fig. 3 and a floor type, such as is usually installed in place of an existing radiator, is shown in Fig. 5. Furnished with chilled water from a central plant, these units offer a satisfactory method of conditioning existing offices, hotel, and apartment rooms. These units may be obtained with filters and outside air connections, but for most satisfactory application are used as supplements to central systems that supply properly conditioned and filtered air to the areas served.

Induction type units, using primary conditioned air under pressure to Induce local circulation, are described in Chapter 30.

Self-Contained Units

A typical large self-contained unit is shown in Fig. 6. It is essentially a remote vertical type conditioner mounted on top of a sound insulated enclosure containing the condensing unit. Air distribution is obtained by means of grilles mounted in the discharge plenum, when the unit is located in the conditioned area. Duct distribution of conditioned air can be obtained by removing the plenum, connecting directly to the blower discharge, and safing the top of the unit.

The heat generated by the compression of refrigerant gases and that given off by the electric motor are removed from the compressor compartment in four ways: by the use of a water coil in the compressor compartment; by utilizing the cold suction gases; by drawing part of the return air through the compressor compartment, and finally by circulating room air through the compressor compartment by means of a fan attached to the motor shaft.

The $7\frac{1}{2}$, 10, and 15 ton self-contained units usually have horizontal type conditioners. The condensing unit enclosures are not completely sound insulated, since they are not usually installed in the conditioned area. Most units can be divided into two or three sections for ease of

handling and installation. Although most large self-contained units have water-cooled condensers, the $7\frac{1}{2}$, 10, and 15 ton units can be obtained for operation with evaporative condensers.

Self-Contained Room Cooling Units

Small self-contained units can be obtained with water-cooled condensers, but they are generally air cooled.

The air-cooled types are small in capacity, ranging from $\frac{1}{3}$ to $1\frac{1}{2}$ hp. Their principal application is for conditioning such spaces as hotel rooms, offices and residential living quarters. A duct connection between the unit and an outside window or ventilated air shaft is required to permit

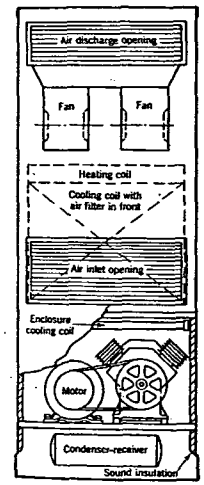

FIG. 6. SELF-CONTAINED WATER-COOLED AIR CONDITIONER

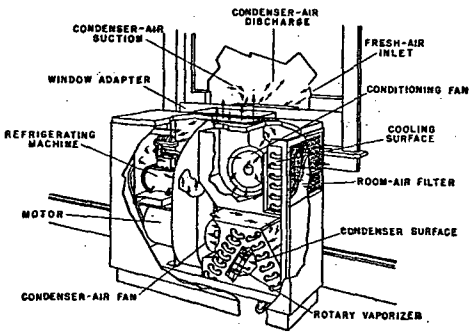

FIG. 7. SELF-CONTAINED AIR-COOLED UNIT AIR CONDITIONER

disposal of the heat extracted from the conditioned area. The unit may stand in front of the window or be mounted on the window sill. Various styles and types of windows encountered tend to increase the difficulty of making the window connections. The evaporation of condensate on the condenser coils, as a means of disposing of moisture, will tend to increase the condensing capacity and reduce the operating head pressure. Some units add supplementary water so that increased capacity may be obtained from constantly wetted condenser coil surface. Connections to an electrical outlet may be made through a conventional cord and plug or a permanent electrical connection, depending on local code rulings pertaining to the installation of small motors. The exterior finish of the unit in metal, wood or fabric is decorated to harmonize with office or bedroom furnishings.

A unit of the air-cooled condenser type for floor mounting is shown in Fig. 7. Of the two fans shown, the lower one acts as condenser air fan, and in some units this fan is arranged with slingers for discharging condensate on the condenser coil, while the upper fan discharges air into the conditioned area. A feature of the design shown in Fig. 7 is that the