

line surge and reducing light flicker. These water cooled units either eliminate or reduce the need for outdoor air connections. Due to the necessity of water and drain connections they are not as portable as the air cooled type.

A new type of self-contained air conditioning unit has achieved prominence, recently, for application in small commercial establishments. These units range in capacity from 2 to 10 tons, and are designed primarily for use in the conditioned space. They are enclosed in steel casings, designed and finished to harmonize with the interior of commercial establishments. These units generally use water-cooled condensers and are designed for use with 100 per cent recirculated air and free discharge although both fresh air connections and discharge ducts can be used with the units.

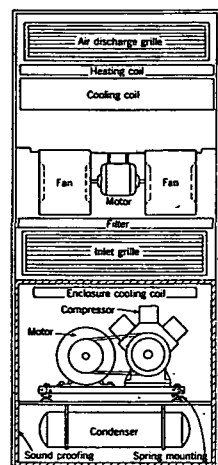


FIG. 16. SELF-CONTAINED AIR CONDITIONING UNIT

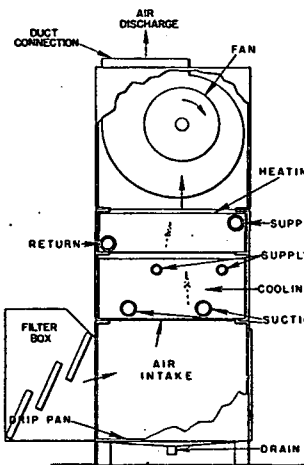


FIG. 17. VERTICAL ALL-YEAR-ROUND CONDITIONING UNIT

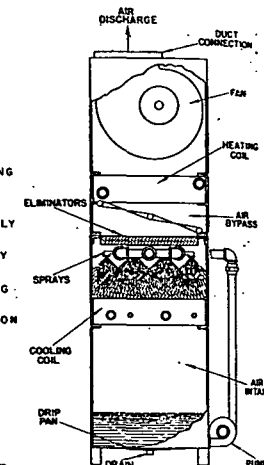


FIG. 18. SPRAY TYPE AIR CONDITIONING UNIT

A typical unit of this type is illustrated in Fig. 16. In this particular unit the air enters a grille located at the front of the unit, passes through a throw-away type filter, then through the cooling coil and is discharged by a blower through an adjustable discharge distributor head. The air is discharged in such a manner to insure good distribution without being directed at the occupants. The air may be discharged from the front only or from the front and either (or both) side. The refrigerating effect is furnished by a reciprocating compressor belt connected to a motor, all mounted on a resilient base to reduce vibration. The heat dissipated by the condensing unit is removed by water cooling. Panels are removable for servicing and replacement of filters. The motor starter and other controls are mounted inside the enclosure and the unit may be operated either as a cooling unit or circulating unit by using the manual switches mounted on the side panel, or it may be automatically controlled by means of a time switch or thermostat.

These units usually provide for the addition of a heating coil as an optional item and some units also have available humidifying equipment as accessory equipment for winter operation.

Remotely located conditioning units vary widely in details of construction. Figs. 17, 18 and 19 indicate one type built-in sections thereby permitting interchangeability of application with a minimum change in parts. The vertical unit shown in Fig. 17 consists of a fan section, housing one or more fans, mounted on a coil section in which are located a heating coil and a cooling coil, which may be built for either direct expansion refrigerant, chilled water, or brine. These two sections are supported on a third or drip pan section. The distributing duct system is attached to the fan outlets and returned fresh air connections are made to the drip pan. A filter box is illustrated attached to the drip pan section. By eliminating the vertical type drip pan and substituting a horizontal drip pan, this unit is converted into a horizontal suspended type conditioning

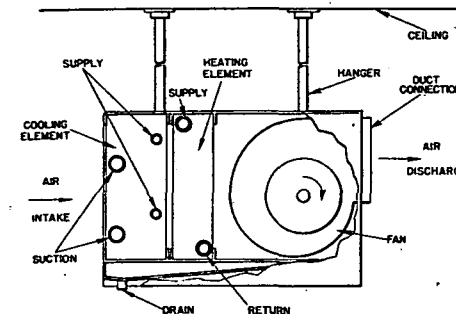


FIG. 19. HORIZONTAL REMOTE TYPE ALL-YEAR-ROUND CONDITIONING UNIT

unit for connection to duct work, both with and without filters, as shown in Fig. 19.

A spray type conditioning unit is illustrated in Fig. 18. This spray type unit, which is similar to the arrangement given in Fig. 17, provides for the complete washing of the air and the cooling coil. For winter operation the spray provides means for humidification. The units may also be obtained with by-pass dampers as shown in Fig. 18, to provide control of cooling in summer and humidification in winter. The spray type unit without the cooling coil may be used for humidification and heat control. This type of air conditioning unit is used in industrial process air conditioning as well as for comfort air conditioning.

Residential Central System Units

The previous figures have largely confined themselves to the illustration of all-year-round or summer conditioning units for office or commercial application. The smaller units have, of course, been applicable to residences. There remains a field of air conditioning units primarily adaptable to residence work. They are in general the outgrowth or adaptation of mechanical warm air systems to conditioning, which are covered in Chapter 20. However, the following illustrations will cover details not included in that Chapter.