In order to reduce the starting load, one model has two separate motors brought on to the line at delayed intervals thereby decreasing the initial 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.

Remotely located conditioning units vary widely in details of construction. Figs. 14, 15 and 16 indicate one type built-in sections thereby permitting interchangeability of application with a minimum change in parts. The vertical unit shown in Fig. 14 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

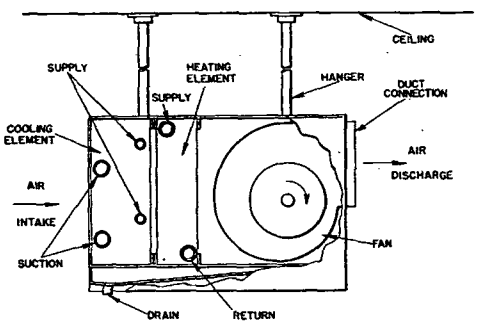

FIG. 16. HORIZONTAL REMOTE TYPE ALL-YEAR-ROUND CONDITIONING UNIT

eliminating the vertical type drip pan and substituting a horizontal drip pan, this unit is converted into a horizontal suspended type conditioning unit for connection to duct work, both with and without filters, as shown in Fig. 16.

A spray type conditioning unit is illustrated in Fig. 15. This spray type unit, which is similar to the arrangement given in Fig. 14, 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. 15, 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.

In Fig. 17 is shown a conditioning unit which may be operated in conjunction with a hot water or steam boiler. Heat generated in the boiler is supplied to an exchanger which raises the air temperature as it is circulated through the unit. The connection of a cooling coil to a

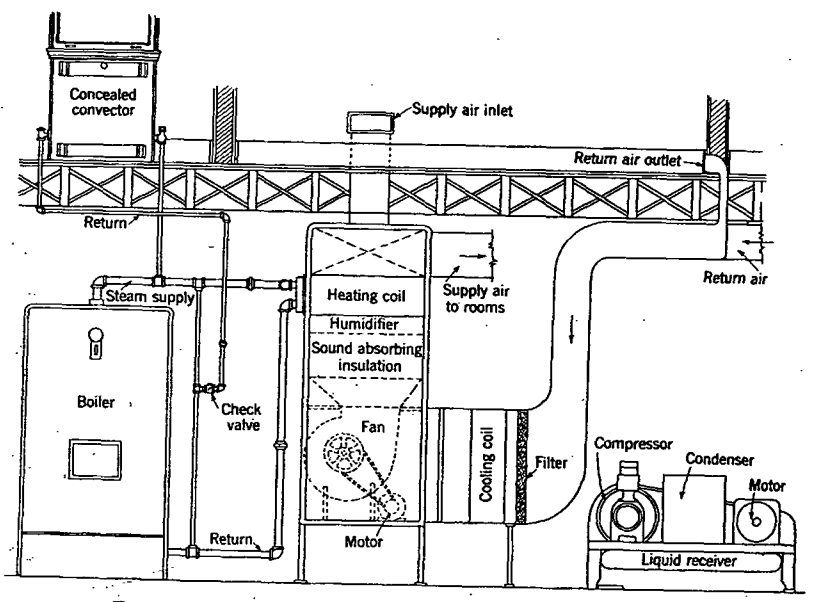

FIG. 17. RESIDENTIAL CONDITIONING UNIT WITH STEAM BOILER

source of refrigeration will provide year-round air conditioning. This type of system is particularly adaptable to a *split* system in which a portion of the residence may be conditioned in the winter and summer while the garage, servants' quarters and less freqently used rooms may be provided with radiator or convector heating directly from the boiler in the winter.

A gas-fired winter conditioning unit is illustrated in Fig. 18 which is equipped with apparatus to filter, heat, humidify and circulate the air in a residence. If a cooling coil is added to the arrangement this unit may also become a year-round conditioner.

A diagram of a direct-fired fuel oil conditioning unit is given in Fig. 19. A circulating fan forces the filtered air over a heat exchanger through which the combustion gases from the oil burner are being directed. A