

suspended type unit cooler which may be designed with or without a moisture eliminator. If high air velocities are maintained, an eliminator will be necessary to prevent the drops of moisture from being carried through with the air. The condensation that occurs is collected in a drip pan and removed from the system through a drain pipe. Fig. 8 indicates a typical floor-mounted unit of the housed fan type. The illustration shows a common form of distributing outlet designed to give low outlet velocities together with a controlled distribution. In process work, it is

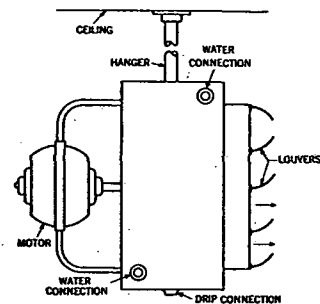


FIG. 7. CEILING TYPE COOLING UNIT

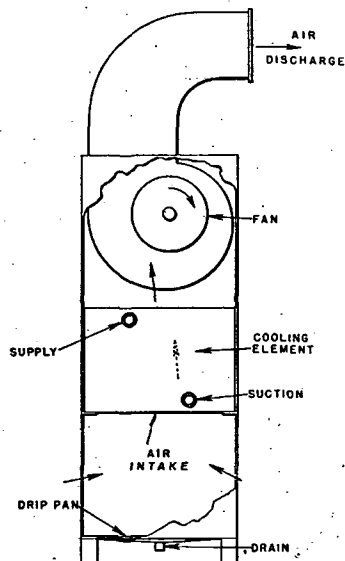


FIG. 8. FLOOR MOUNTED SURFACE TYPE COOLING UNIT WITH DISTRIBUTING OUTLETS

often important that direct air distribution does not impinge on the product.

Unit coolers are normally constructed of galvanized steel or non-ferrous material in order to reduce the corrosive effect of their constant wetted condition.

Unit coolers are often called upon to operate in rooms where a temperature below freezing is maintained and low refrigerant temperatures are required. This results in the collection of frost on the heat transfer surface which in turn leads to a rapid loss in capacity and requires eventual defrosting. Such defrosting is accomplished by the following methods:

1. When the room is above freezing the source of refrigeration is cut off and the fan allowed to operate until the unit has defrosted.
2. A reversal of the refrigeration system may be provided and the so-called hot gas defrosting method used. This is accomplished by reversing the flow of the hot gas so that it is delivered directly from the compressor to the evaporator of the

cooling unit. As soon as the ice and frost has been melted, the system is again returned to its normal cycle.

3. Where brine is used as a refrigerant, heated brine may be sent through the cooler to remove the ice.

4. When the room is at very low temperatures, warm air defrosting is sometimes used by providing for the admission and removal of warm air from outside the cooled space.

5. The surface may be sprayed with a strong brine solution.

In order to prevent the collection of frost in low temperature rooms where high latent heat loads are present, unit coolers equipped with a constant brine spray are frequently used. These are normally of the

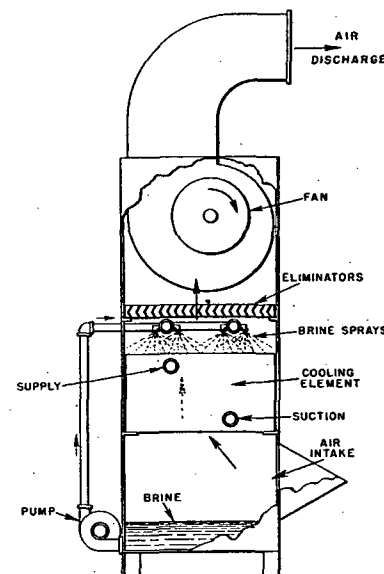


FIG. 9. BRINE SPRAY TYPE COOLING UNIT

housed fan type similar to Fig. 9, but equipped with a pump for recirculating brine over the coil. It is, of course, necessary to strengthen the brine at intervals to maintain a non-freezing mixture.

Ratings of unit coolers may be expressed in Btu per hour, or in tons of refrigeration and should specify the quantity, temperature and humidity of the air entering the unit with a stipulated refrigerant temperature within the coil. When chilled water or brine is used, the rate of circulation of the cooling media as well as its entering temperature must be given.

UNIT AIR CONDITIONERS

According to the definition given in Chapter 44, to qualify as an air conditioning unit such equipment must simultaneously control at least