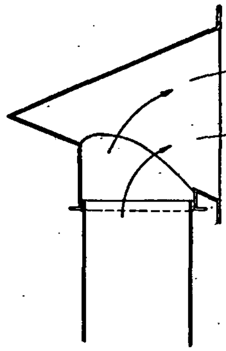

FIG. 8

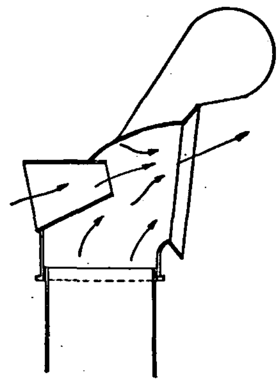

FIG. 9

ROTARY VENTILATORS

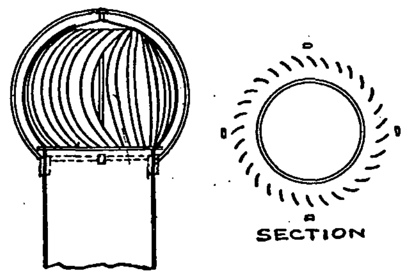

FIG. 10
AIR-TURBINE VENTILATOR

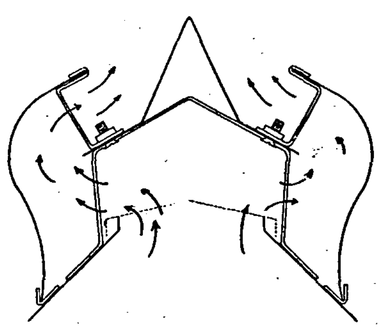

FIG. 11. CONTINUOUS TYPE ROOF VENTILATOR

In considering roof ventilators, as already described in this chapter, the general action of the wind upon the building, should be kept in mind.

A ventilator located within the region indicated by *A* in Fig. 1, will not contribute any inductive effect because in this region there is little or no wind. The ventilator opening will function, but will function in the same way as would a window in that locality, because of the resultant effect of the suction produced by the wind acting upon the building, and by whatever temperature differences prevail.

Roof ventilators are effective if placed in the wind-flow, no matter what the direction of the wind. On the other hand, if ventilators do not stand in the path of the wind, and depend only upon the same forces for producing flow as do windows or any other plain opening, they are at a disadvantage because of the greater resistance of their more complex passages.

Types of Roof Ventilators

The simplest form of roof ventilator is the *stationary* type shown in Fig. 2 and consists of an outlet pipe with a conical hood above it. The addition of a storm band, as shown in Figs. 3, 4, and 5, gives an increased protection against the entrance of rain or snow. The storm band, if placed so close to the cones as to restrict the outflow of air, interferes with ventilation. On the other hand, if the openings are made large enough to permit free egress of the inside air, the storm band increases the ventilation by better utilizing the wind velocity to produce suction.

A further development of the latter principle is the *siphon* ventilator, as illustrated in Fig. 6, in which siphons or ducts are introduced for the particular purpose of producing suction.

In the swiveling or *rotary* ventilators, typified by Figs. 7 and 8, a freely rotating cowl is used. A wind vane is provided for keeping the opening facing away from the direction of the wind. This type allows free egress of the inside air (unless the outlet is made unduly small). Its action depends chiefly upon the suction produced by the wind on the leeward side of the ventilator.

In the *induction* or *ejector* type of ventilator, which is also of the swiveling or rotary type, Fig. 9, the kinetic energy of the wind is intended to create a suction inside the cowl as well as outside.

Resistance to flow of air in the ventilator is caused by: (1) restricted outlet openings, or (2) many turns or changes of the direction of the air flow. As regards the first item, this depends entirely upon the proportions, and not upon the type; some of the stationary ventilators have smaller, and others have larger outlet area than some cowl ventilators of the same nominal size. Regarding the second item, the swiveling cowl ventilators offer less resistance than the stationary type, in that the direction of air flow is changed as little as possible.

Unless swiveling ventilators move very freely, the opening, at times, faces towards the wind so that ventilation produced by temperature difference is much reduced, or wholly counteracted. In that case, snow and rain may blow in. The rumbling or creaking noise caused by a hard turning swivel ventilator also is very unpleasant. These troubles are, of course, eliminated in well-designed ventilators, but must be kept in mind.