This invention relates to improvements in deflector arrangements for building ventilating and cooling systems and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The installation of ventilating and cooling systems in theaters and other places of large public gatherings for supplying fresh air at the desired temperature thereto, is most necessary to meet the public demand. The placing of the discharge mouth of the system, is in many instances determined by the general outline of the building with the result that said mouth cannot always be placed in the position for most efficient distribution of the air. In some theater installations, it is only possible to place the discharge mouth down near the floor near one side wall. With the usual deflectors now employed, it is not possible to direct the moving air so that it will be distributed evenly over the entire auditorium of the theater.

The primary object of the invention is to provide a deflector construction for such systems, which will direct the moving air for the best distribution thereof no matter where the discharge mouth may be located.

A further object of the invention is to provide a deflector embodying two sets of louver boards or vanes, with the boards of one set arranged at a right angle to those of the other set whereby the passages defined thereby are disposed in the direction it is desired to deflect the moving air. These objects of the invention, as well as others, together with the many advantages thereof will more fully appear as we proceed with our specification.

In the drawings:

Fig. 1 is a typical section through a portion of a theater building in the ventilating system of which is embodied our improved deflector construction.

Fig. 2 is a view in front elevation of the discharge mouth of a ventilating system embodying our improved deflector construction, with the louver boards arranged in a different manner from that shown in Fig. 1.

Fig. 3 is a horizontal section as taken on the line 3–3 of Fig. 2.

Figs. 4 and 5 are diagrammatic views showing relative different positioning of discharge mouths due to different building conditions.

In Fig. 1 we have illustrated the fan room 1 as located beneath the stage 2 of a theater, building 3. In the fan room 60 the front of which is formed by an upright wall 4, is located the cooling and ventilating fan casing 5, the fan of which is driven by an electric motor 6. In the wall 4 is located the deflector 7 the rear end 65 of the casing of which is connected by a canvas connection 8 with the discharge end of the fan casing 5. The inlet for the fresh air into the fan room may be provided by an opening 9 in the rear wall of the theater and in which any suitable kind of closure devices may be employed, said inlet being connected to the fan room by a duct 10. The deflector 7 includes a rectangular casing open at its front and rear and set in an opening in the fan room wall 4 and which casing comprises side boards 11–11 and top and bottom boards 12 and 13 respectively. Said casing is usually of a depth greater than that of the wall and is provided with a plurality of sets of louvers or deflector vanes 14 and 15, and herein termed the “front” and “rear” sets of louvers or deflector boards respectively. As best shown in Figs. 2 and 3, the front louvers are disposed vertically and the rear louvers are disposed horizontally. The front louvers are spaced a desired distance apart and are inclined toward one side and the rear end of the casing at an angle approximating 30° while the rear louvers are spaced the same distance apart and are inclined downwardly and forwardly at the same angle. The louvers may be made of thin wooden boards or of metallic strips of such rigidity as to amply resist vibration under the action of the air passing through the deflector casing. The ends of said louvers may be fixed in their respective casing boards in any suitable manner and in the case of wooden louvers, blocks or strips 16 are nailed to the casing boards and the louvers engage upon said blocks and are likewise nailed thereto. So that the louver boards will not appear too conspicuous, the front of the deflector casing may be covered with a suitable grating 17, of such open mesh as to
in no way interfere with the passage of the air current therethrough.

In Fig. 4 is illustrated a diagrammatic plan view of a theater building 3, or the like wherein the deflector 7 is positioned in the stage wall thereof and near the floor and adjacent one side wall. Under such conditions it is apparent that with a deflector casing having only one set of louvers or deflectors, the moving current of air could only be deflected either in a horizontal plane or in a vertical plane and therefore there would be dead air pockets in certain parts of the theater and an overabundance of air in certain other parts thereof. With our improved deflector in place, the louvers would be so assembled in the deflector casing as to direct the current of air not only away from the adjacent wall but also upwardly away from the floor and over toward the diagonally opposite corner as indicated by the arrows 18 in said figure, which current would also be deflected upwardly. In this manner the entire volume of air within the auditorium would be caused to move to circulate.

In Fig. 5 is shown a diagrammatic vertical section of a theater building 3 looking toward the stage 2 and wherein the deflector 7 is placed above the proscenium arch and to one side the center thereof which would bring the deflector casing quite a distance above the floor. Under such conditions the sets of deflectors would be so positioned as to deflect the air downwardly and laterally as indicated by the arrows 19 and thus insure the maximum of ventilation and this without any localized drafts. It is to be understood that the stale warm air, displaced by the incoming fresh cool air, passes up the stacks or ventilators (not shown) to the outside atmosphere. It is to be understood that after the place of location in a theater building is known, the louvers are positioned in the deflector casing to meet that particular location in which the deflector is to be installed.

Our improved deflector is indeed simple in construction and is efficient in operation for its intended purpose. It has no moving parts requiring attention and there is nothing to get out of order.

While in describing our invention, we have referred to certain details of mechanical construction as well as form and arrangement of the parts thereof, the same is to be considered as by way of illustration only, and not by way of limitation except as may be pointed out in the appended claims.

We claim as our invention:

1. A ventilating and cooling system including a fan and casing therefor having an inlet and an outlet, a deflector casing, operatively connected to the outlet of said fan casing, and a plurality of sets of deflector members in the deflector casing, with the members of one set arranged at an angle to those of the other set.

2. A ventilating and cooling system including a fan and casing therefor having an inlet and an outlet, a rectangular deflector casing having inner and outer sets of deflector members with the deflector members of one set extending at a right angle to those of the other set, the members of both sets being pitched at substantially the same relative angle.

3. A deflector for a ventilating system including an open front and rear deflector casing comprising upright side members and horizontal top and bottom members, inner and outer sets of spaced deflector members in the casing, with the members of one set extending parallel with the side members of the casing and with the members of the other set extending parallel with the top and bottom members of the casing, the deflector members in each set being inclined at an angle to the plane in which they are located.

In testimony whereof, I have hereunto set my hand this 27th day of February, 1926.

ARCHIE FEINBERG.

In testimony whereof, I have hereunto set my hand this 8th day of March, 1926.

ISADORE M. HALVERSON.