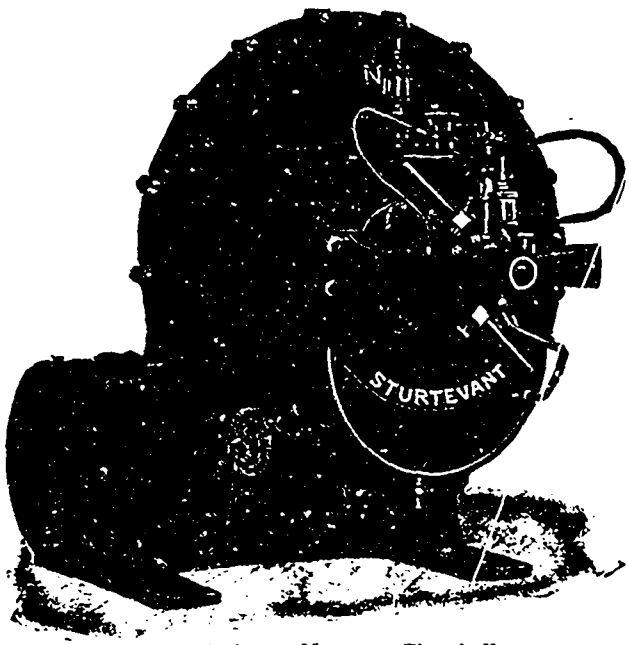
THE STURTEVANT ELECTRIC FANS.

In the accompanying illustration is presented one of the Sturtevant Monogram Type Electric Fans. The shell of the fan is of cast iron, exactly similar in proportions and form to that used in the regular Monogram Blowers and Exhausters. This fan is arranged as an exhauster having the side to which the motor is attached entirely closed, so that air and dust will not be drawn across the motor.

The field ring of the motor is of wrought iron, and is bolted directly against lugs which project from the side of the fan.



turtevant Monogram Electric Fan.

The poles are two in number, also of wrought iron, and carry the field windings as shown.

The armature is of the drum wound type, and the shaft carrying the same is supported in ring oiler bearings suspended in yokes projecting from either side of the field ring.

To avoid any trouble from oil, it is dripped directly into a tank attached to the under side of the field ring.

The entire arrangement is extremely compact and stable, and is susceptible of support in any desired position. In very small sizes it is sufficiently portable to be used for temporary location, as for instance, in different parts of the hold of a ship.

Plants of this type are usually built to operate at pressures of from 1 oz. to 5 oz. per sq. in. The illustration is taken from Bulletin H. recently issued by the B. F. Sturtevant Co., of Boston, Mass.

In its excellent treatise on "The Ventilation and Heating of School Buildings" the B. F. Sturtevant Co., of Boston, Mass., makes this emphatic statement. "It is evident that, above all else, the movement and supply of air in a ventilating system must be made positive at all times, but readily variable to suit changed conditions, and experience has conclusively proved that only by mechanical aid can these results be obtained. Hence the rapid and extended introduction and the assured success of this comparatively new method of ventilation, whereby, in its ordinary application, the air of any desired volume and temperature, is forced to the exact points where it is wanted." How absolutely this fact holds true in practice, and how essential mechanical means are to the attainment of success are clearly evidenced in the following lucid statement from the pen of Prof. S. H. Woodbridge.

"The superiority of the so called mechanical, as compared with the gravity, method of ventilation appears in the relatively small space needed for flues, both supply and discharge; in the sureness and uniformity of ventilating action through all variations of weather; and in the low cost of moving air through a ventilating system. Air ways in gravity methods must be made from two to three times larger than those required in well arranged mechanical methods, unless the rate of flow through the flues by the gravity method is greatly accelerated by heat used for that purpose. The mechanical, and therefore, the money, waste inherent in such a method appears from the fact that when the escaping air is raised 30 in temperature, each cubic foot of that air carries outward more than one-half a thermal unit—in work equivalent, approximately 400 foot lbs. In a well designed mechanical system the average requirement of work expended on each cubic foot of air is less than 10 foot pounds.

"Under these latter conditions the maximum power expenditure would be one horse power for each 200,000 cubic feet of air moved per hour, one-half horse power per class room and its equivalent in other air supply throughout the building. If the air is propelled through a ventilating system by steam driven fans, and if the engine steam is condensed by the ventilating air which it serves to warm, the cost of the motive power used is negligible. If the exhaust steam is wasted the cost in full per class room would be two pounds per hour. If the exhaust steam is used for warming purposes, the fuel cost would be reduced from one-fifth to one-sixth pounds per hour per class room, as against the seven pounds above found necessary for heating the discharge air in vent flues through a range of 30 in temperature. The reduction of fan work to a minimum is not, under the circumstances, important as a matter of economy. The main duct velocities may easily be carried to and beyond 1,000 linear feet per minute, and the flow through distributing and up-take flues to 750 linear feet. Between the mains and the branches a velocity of from 1,000 to 1,500 linear feet can be provided for the purpose of insuring an evenness of supply to rooms under the ordinary varying conditions of air pressure in them due to wind action."