

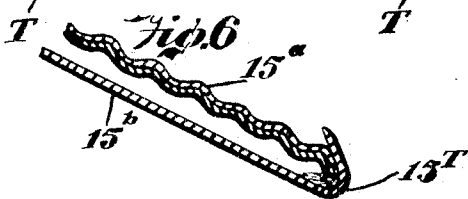
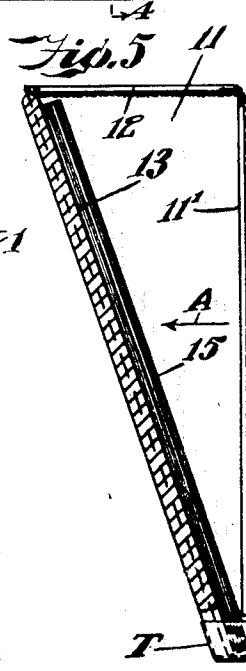
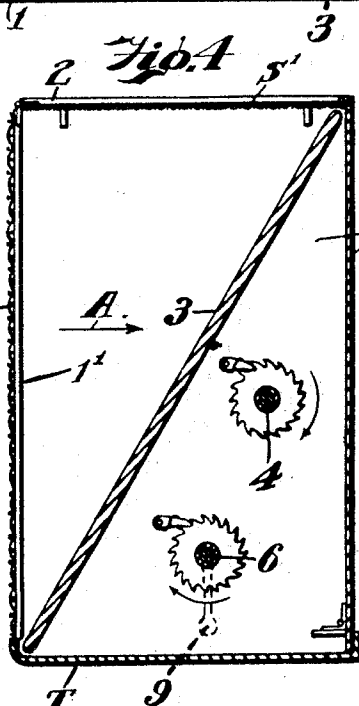
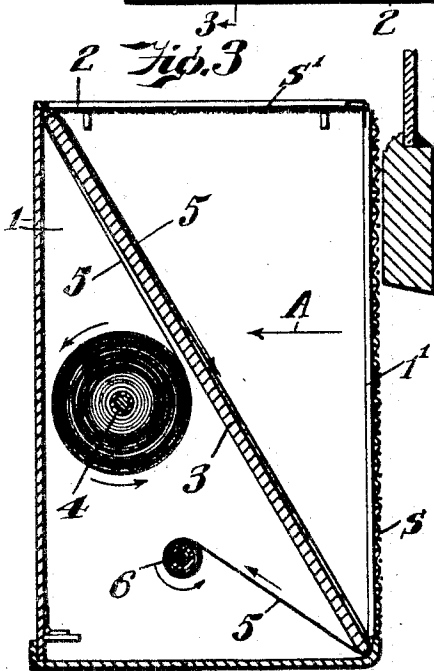
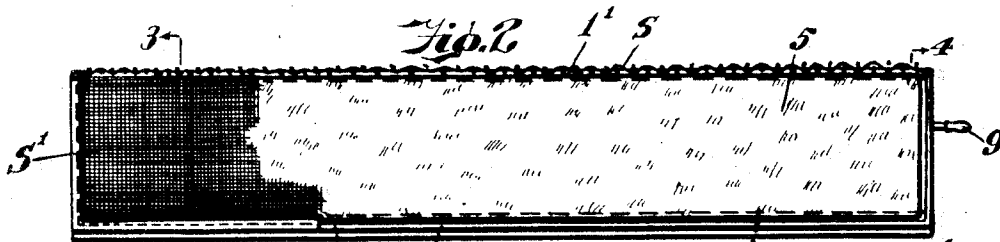
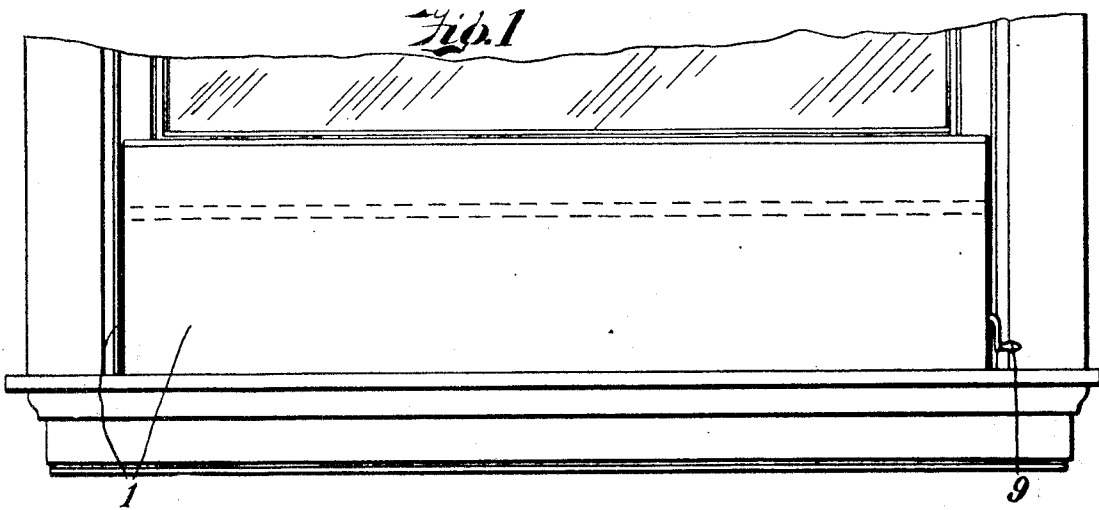
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C. R. C. BORDEN

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DUST ARRESTING VENTILATOR

Filed April 6, 1928



Inventor
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UNITED STATES PATENT OFFICE

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DUST ARRESTING VENTILATOR

Application filed April 6, 1928. Serial No. 267,838.

My present invention relates to the dust arresting ventilation of buildings and contemplates particularly that phase of ventilating in which dust or soot laden air is taken by direct draft into the room from outdoors.

With the congested conditions of modern urban life the penetration of dirt of various characters has become one of the most serious problems. In buildings adjacent congested streets and particularly in the case of public buildings, such as apartments, hotels, office buildings, clubs and the like, the so-called dirt factor is so important as to represent a very considerable expense. The undesirability of such dust and dirt is obvious and the intrusion of such dirt has always been a nuisance and annoyance.

My invention contemplates free ventilation with the elimination of a very large percentage of this dirt and dust nuisance and a corresponding saving in expense to those charged with the keeping of these public or semi-public buildings in a habitable condition.

In accordance with my invention I provide for ventilation as well as dust elimination, and in fact, I utilize certain well known ventilating principles in making effective the elimination of the air carried dust. My invention permits these factors to so combine that the desired ends may be attained at a minimum cost.

As illustrative of my invention I show characteristic illustrations of what might be called simple and established ventilation types which by their very simplicity illustrate the possibilities involved in my concept. In the drawings I have illustrated in

Fig. 1 is a view of device installed in the window and viewed from the inside thereof.

Fig. 2 is a plan view of such a device removed.

Fig. 3 is a sectional view on the line 3-3, of Fig. 2, viewed from the right of Fig. 2.

Fig. 4 is a sectional view on the line 4-4, of Fig. 2, viewed from the opposite direction.

Fig. 5 is a sectional view of a simplified

form of device using sheets instead of rolls, and

Fig. 6 is a sectional detail view of corrugated sheet.

Referring to the structure shown in Figs. 1 to 4, I provide a frame 1 adapted to be inserted in the window opening and having an open face 1¹ which may, if desired, be screened as at S to exclude the entry of larger particles of foreign matter, but not fine enough to interfere with the direct passage of the air. As indicated at the arrow A the air on entering the casing from the open window strikes an inclined deflector 3 which is preferably set at about 45° angle to the entering air current but may be adjusted to secure variations in draft as desired.

The air impinging upon the surface of the deflector 3 is directed upward and passes through an opening 2 in the casing which may be screened as at S¹ through which it is admitted into the room. At the rear of the deflector 3 as shown in Figs. 1 to 4, are mounted a pair of shafts 4 and 6. Wound on one of these shafts as at 5 is a supply of impregnated paper or fabric which is drawn down over the surface of the deflector 3 and wound on the shaft 6 which may be turned by a crank 9. The strip 5 is preferably coated on one surface and that surface disposed outwardly when drawn over the deflector 3. The coating of the strip 5 is tacky or adhesive and of such a character that its condition will be maintained through normal ranges of temperature and for reasonable length of time without drying. While a variety of substances and mixtures may be employed I find that petrolatum jelly makes a very satisfactory coating and is strongly retentive of impinged dirt. In applying it to such a body as paper, I first warm the petrolatum and impregnate the paper so that it is thoroughly saturated. I then apply an additional amount as a surface excess which will thus remain as a coating. The paper may be of composite character, as for example, having an absorbent surface and a backing of higher tensile strength. I preferably use a petrolatum which is not fluent at usual warm temperature or if a softer body such

as castor oil is used I mix it with a less fluent body as with rosin. I preferably embody in my tacky coating an antiseptic or disinfectant principle adapted to assure reasonable sterility in the sheet as it is withdrawn after use and rolled up. This is important where rolls of considerable length are employed so that the sheet impregnated with dirt is kept in the machine for considerable length of time. This prevents any breeding of bacteria which might take place if the sheets were not thus treated and keeps them sterile or at least discourages the breeding of bacteria. For this antiseptic property I may use carbolic or mercuric derivatives, which may be mixed with the petroleum jelly before applying it to the paper.

Such preparation is sufficiently tacky to pick up or abstract from the intruding air the most minute particles or films of dirt. By utilizing the deflector as a draft producer and as a baffle plate, the air is made to impinge with a definite velocity so that the particles carried by it are brought against the sticky surface in such a way that they lodge and are retained by that surface.

While I have referred to my dirt trapping medium as "tacky" and which is preferably tacky or sticky in the usual sense I do not wish to be limited thereby as my invention may be practiced by keeping the surface at 3 moistened, as for example, by a soapy solution with a little glycerine to retard drying.

I provide at the bottom of the casing 1 a trap T so that if there is any flow or drip of the impregnating material due to unusual heat, it will be held without undesirable results.

In Fig. 5 I have shown a modification of this device in which I provide a casing 11 having an open front 11¹ and an open upper end 12. On the inclined wall of the casing 11 I provide a surface 13 on which is held a sheet 15 having a sticky surface. These sheets 15 may be of paper or cardboard and removable or replaceable as desired. I provide in this structure also a trap T at the bottom of the incline to catch any possible drip.

In the form of sheet shown in Fig. 6 I use a corrugated material such as light weight inexpensive corrugated fibre board 15a. Such a board is capable of taking an impregnation of my tacky dirt trapping compound and when disposed in the ventilator with its corrugations transversely presents not only an increased surface exposure but one against which the draft carried dirt impinges more directly. Furthermore, the transverse ribs tend to retain the coating in distribution so that a maximum of tackiness may be attained.

I also may use with this or other types of sheet a backing or envelope 15b of paper impermeable by the coating material even

in a fluent state. Such a sheet I turn tip at the edge so that when set up in inclined position as shown in Fig. 6 a trap 15T is formed for any possible drainage of the coating.

Such an embodiment of my device is very simple, inexpensive and in fact the general structure of this device is one heretofore more or less commonly in use and to which my invention may be applied, converting it from a mere ventilator to a dirt arrester without interference with its function as a ventilator.

In fact, my invention may be applied to a great variety of ventilators but is particularly adapted to those where the air is deflected from an angularly disposed baffle surface on which the sticky coating may be supported and against which the dirt particles will impinge by the natural passage of the air. All such modifications and adaptations of structure are to be considered as within the purview of my invention as defined in the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. A dirt arresting sheet for ventilators having transverse corrugations with surface of tackiness retentive of air borne particles and a guard sheet beneath said first named sheet and having its edge overturned on the latter to provide a trap.

2. A window ventilator including a casing adapted to be disposed at a window opening and having an air passage therethrough, a deflector member disposed transversely of the window and at an angle to the intake of the passage, and a sheet removably supported on said deflector and having a surface of tackiness retentive of dirt particles impinged thereon by the incoming air draft.

3. A window ventilator including a casing adapted to be disposed at a window opening and having an air passage therethrough, a deflector member disposed transversely of the window and at an angle to the intake of the passage, and a plurality of superimposed sheet members supported on said deflector and successively removable therefrom and having a surface of tackiness retentive of dirt particles impinged thereon by the incoming air draft.

4. A window ventilator including a casing adapted to be disposed at a window opening and having an air passage therethrough, a deflector member disposed transversely of the window and at an angle to the intake of the passage, and a sheet pack comprising a plurality of successively removable sheets supported on said deflector and each having a surface of tackiness retentive of dirt particles impinged thereon by the incoming air draft.

In testimony whereof I affix my signature.

CHARLES R. C. BORDEN.