

FORM 2
THE PATENT ACT 1970
(39 OF 1970)
AND
The patent rules, 2003
COMPLETE SPECIFICATION
(See section 10: rule 13)

1. **TITLE OF INVENTION**

PASSIVE STATIONARY ROOF VENTILATOR

2 **APPLICANTS**

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3. **PREAMBLE TO THE DESCRIPTION**

COMPLETE

Following specification particularly describes the invention and the manner in which it is to be performed.

4. DESCRIPTION.

Technical field of invention:

Present invention in general relates to ventilator means air exhaust and particularly to roof ventilator by accelerating natural ventilation by wind energy comprising passive stationary venturi to save energy.

Prior art:

Existing roof ventilator comprises a wind energy driven turbine ventilator (US Patent 302778) and also works on the hot exhaust air current through the roof of homes or factories. It comprises a multiple of turbine blades mounted on the periphery of a rotating member which supported on a rotably mounted shaft rotating on bearings. When hot exhaust air passes through such turbine blades due to pressure difference the turbine blades start rotating however, such operation creates a drag on the free flow of the hot air thus reducing the exhaust air flow. Further when the turbine blade exposed to the natural flow of air the blade assembly starts rotating and create a suction inside the turbine and accelerate the ventilation process thus helping faster exhaust of the hot air however the design of the turbine utilizes only half projected section of the turbine whilst remaining half section offers a drag being moving against the direction of wind thereby increasing the overall size of the said ventilator and thus renders the design ineffective and further the whole assembly is rotably mounted on bearings thus renders it unreliable and further whenever subjected to gust of wind may cause over speeding, vibration, and undue centrifugal forces on blades and may become dangerous for the birds or the personnel working nearby.

Hence there was a long felt need in the art to have such a ventilator for homes/industry roof that would replace conventional low efficiency, bulky, noisy and unreliable turbine ventilator by a stationary high efficiency, reliable and cost effective ventilator using Bernoulli/venturi principle.

Object:

1. Primary object of the present invention is to dispense with rotating turbine ventilator with stationary ventilator.
2. Another object of the present invention is to ventilate homes, factories by exhausting hot/ stale trapped air through roof.
3. Another object of the present invention is to utilize natural wind energy for efficient ventilating process.
4. Yet another object of the present invention is to provide noise free and vibration free operation.
5. Yet another object of the present invention is to dispense with bearings, rotating members.
6. Yet another object of the present invention is to make the ventilator omni-directional.
7. Yet another object of the present invention is to minimize maintenance.
8. Yet another object of the present invention is to make the ventilator screen protected and drip proof.
9. Yet another object of the present invention is to make it cost effective, safe and easy to install.

Other objects, features and advantages will become apparent from detail description and appended claims to those skilled in art.

STATEMENT:

Accordingly following invention providing a novel ventilator particularly applicable for efficiently exhausting hot air, gases from the homes and factories by utilizing natural air draft aided by natural wind velocity means passive means without any form of any other external energy sources, comprises plurality of radial vanes means blades angularly and uniformly mounted between two preferably circular plates, the top being used as a cover whereas the bottom plate has a concentric circular hole of certain diameter and the said plurality of vanes extend from outer diameter to the outer diameter of the said hole of the said plate and the cavity between two adjacent vanes forms a wind guide such that the area goes on decreasing from the outer diameter to inner diameter goes on decreasing means when the wind at certain velocity enters the said cavity at the outer diameter flows at higher velocity when it reaches the inner hole diameter thus as per gas laws its pressure goes on decreasing thus creating a partial vacuum therein and the said hole connected through a flanged pipe being mounted on roof and connected to the inner space below the roof of the home/factory, sucks the air from within and thus a mixture of wind air and exhausted air enters the opposing cavity formed by other adjacent vanes wherein the section of the cavity goes on increasing thus reducing the velocity and increasing the pressure and discharges in the atmosphere and the said plurality of vane being placed radially and uniformly on the periphery of the said plates makes it omni-directional means it functions

uniformly irrespective of the direction of wind and further if there is no wind flowing its acts as a natural ventilator with additional natural draft effect due to the geometry of the ventilator and the said ventilator being mounted on roof means outdoor application protected from the ingress of rains by preferably removable louvers set at certain degree and screen for protection (SPDP) embodiment.

The term ventilator means an apparatus used to remove hot, stale air/gases from the homes, factories or any enclosed space.

BRIEF DESCRIPTION OF DRAWING:

This invention is described by way of example with reference to the following drawing where,

Figure 1 and 2 of sheet 4/1 show the top and front views of ventilator assembly of the said invention in ready for operation condition fitted on inclined roof with mounting flanges, removable screen protected drip proof embodiment; where,

100, 200, 300, 400, 500, 600,700, 800 denote the top supporting member plate, plurality of vanes, bottom supporting member plate, ventilator inlet pipe with flange 401, roof mounting inlet pipe with flange 501, 600 and 700 SPDP embodiment, inclined roof with suitable opening 801 respectively.

Figure 3 and 4 of sheet 4/2 show the top and front views of ventilator assembly of with top mounting member plate and SPDP embodiment removed; where,

200, 300,400, 500, 800 denote plurality of vanes, bottom supporting member plate, ventilator inlet pipe with flange 401, roof mounting inlet

pipe with flange 501, inclined roof with suitable opening 801 respectively; and

A, B, C, and D denotes the wind inlet, central chamber, outlet and ventilator inlet opening respectively and;

201, 203 and 505 denote direction of wind at the inlet, direction of the wind and ventilated air/gases at the out let and ventilated air/gases inlet direction.

Figure 5 of sheet 4/3 shows schematics of exploded of view of various embodiments of the said invention where,

700, 600, 100, 200, 300, 400, 500 denote screen, louvers, top mounting member plate, assembly of plurality of vanes 200 on bottom mounting member plate 300, ventilator inlet pipe with flange 401, roof mounting inlet pipe with flange 501 respectively.

Figure 6 of sheet 4/4 shows pictorial view of said invention with removable SPDP embodiment where;

700, 600, 200,100, 300, 400, 500 denote screen, louvers, assembly of plurality of vanes 200 between top mounting member plate 100 and bottom mounting member plate 300, ventilator inlet pipe with flange 401, roof mounting inlet pipe with flange 502 and mounting hole 502 respectively.

In order that the manner in which the above-cited and other advantages and objects of the said invention are obtained, a more particular description of the invention briefly described above will be referred, which are illustrated in the appended drawing. Understanding that these drawing depict only typical embodiment of the invention and therefore not to be considered limiting on its scope, the invention will be

described with additional specificity and details through the use of the accompanying drawing.

Detailed description:

The present invention provides a novel roof ventilator which accelerates the process of natural ventilation meant for removing air, gases from enclosed spaces like homes, factories, go-downs etc by the help of wind energy and being static means stationery means having no moving parts, passive means without any other form of external energy other than natural wind energy, further being stationary means quite, vibration free, maintenance free; being symmetrical means operation not affected by change in direction of wind means omni-directional, using entire cross section of the vane assembly means smaller in size means cost effective, so as to carry out the said operation effectively and efficiently.

The present roof top stationary, passive ventilator comprises plurality of vanes 200 having certain thickness and shape however; for illustrative purposes eight vanes are shown, being placed and rigidly fixed vertically, radially and symmetrically between bottom supporting member plate 300, preferably conical in shape hereinafter referred to as bottom plate, and top supporting member plate 100, preferably conical in shape hereinafter referred to as top plate, and said top and said bottom plate preferably having same outer diameter such that eight uniform sections S2 are formed and such assembly hereinafter referred to as wind guide 150 and the said bottom plate having a concentric hole of certain diameter, hereinafter referred to as inner hole 402, provided for the inlet of ventilated air through duct 400, and the vane has certain height to decide the wind air entry quantum and its top edge preferably

extends from outer section S1 to the centre of said top plate S2 and its bottom edge extends from outer edge of the bottom plate up to the outer section S1 of the said inner hole 402 and the uniform guides so formed between two adjacent vane having more cross section S1 on the outer edge and decreases towards the centre of the said plates to S2 such that the ratio of outer diameter and inner hole diameter decides the ratio of volume of the wind flow in direction 201 and the wind velocity V1 increases to V2 when it flows from outer edge to inner hole 402 and so the pressure decreases as per the gas law and since the air at the said outer section S1 is at atmospheric pressure, the wind pressure decreases below atmospheric pressure near the said hole diameter 402 thereby creating partial vacuum and such partial vacuum accelerate the process of ventilation of the said enclosed space B and further the said ventilated air gets mixed up with the wind and flows through the opposite cavity S3 formed by another pair of vanes where the cross section gradually increases from inner hole to outer section S3 thus reducing the velocity V4 and increasing the pressure and said mixed air discharges in to atmosphere C in the direction 203 and further another embodiment 650, hereinafter referred to as SPDP, comprises of a net means mesh means screen 700 covers the entry of said wind guide 150 around its periphery having certain diameter and height to prevent entry of insect etc to render it vermin proof and to prevent the ingress of water or rains louvers are provided over the said mesh means screen and the said embodiment SPDP slidably fitted on the outer periphery of the said wind guide 150 for routine cleaning of said SPDP if so demanded and further the said top plate 100 is provided with conical shape to prevent stagnation of water, dust, trash etc. and a flanged pipe means inlet duct 400 having certain diameter same as the central hole 403 attached to the enclosed space B and the diameter of the said inlet duct preferably in a

conical form 402 to assist ventilated air flow and the said inlet duct 400 preferably extended by bolting through holes 401 to ventilating duct 500 and remaining end of the said ventilating duct suitably shaped to suit the roof inclination and bolted over the opening 801 of the roof 800 through holes 501 so that the said embodiment 150 remains vertical.

Additional advantages and modification will readily occur to those skilled in art. Therefore, the invention in its broader aspect is not limited to specific details and representative embodiments shown and described herein. Accordingly various modifications may be made without departing from the spirit or scope of the general invention concept as defined by the appended claims and their equivalents.

CLAIMS

We claim:-

1. A passive, stationary roof ventilator for evacuating air from a space including:
a plurality of vanes having certain height radially placed and fixed between two plates extending from near the centre towards the outer periphery defining top plate and bottom plate forming tapering space between adjacent vanes therein;
a bottom plate having a central opening connecting said vane central cavity to the said space through a duct.
2. As claimed in claim-1 a second preferred embodiment comprises a screen and louvers enclosing the opening thereof; and preferably removable.
3. As claimed in claim-1 the top plate and bottom plate preferably in circular form and more preferably in conical form to prevent settling of water, dust, trash thereupon.
4. As claimed in claim-1 and claim-2 the louvers inclined to certain degree to prevent ingress of rain water therein; and screen having certain opening to render vermin proof.
5. As claimed in claim-1 the plurality of vanes equally spaced on the periphery of said top plate and bottom plate; and the top of the vanes preferably extending to the centre of the said top plate and bottom of the said vanes to the edge of the hole on the bottom plate.
6. As claimed in claim-1 the duct connecting the centrally formed vane cavity means space to the space being evacuated, preferably extending to certain height within and preferably having conical profile.
7. As claimed in claim-1 the extended duct connecting the roof top to the duct as claimed in claim-6 preferably having a flange suitable for angle of the inclined roof.

ABSTRACT

The present invention provides a novel roof ventilator which accelerates the process of natural ventilation meant for removing air, gases from enclosed spaces like homes, factories, go-downs etc by the help of wind energy and being static means stationery means having no moving parts, passive means without any other form of external energy other than natural wind energy. Following invention is described in detail with the help of Sheet 1 through sheet-4 in Figure-1,2,3,4,5 and 6 showing various views of the said ventilator.

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Sheet 4/1

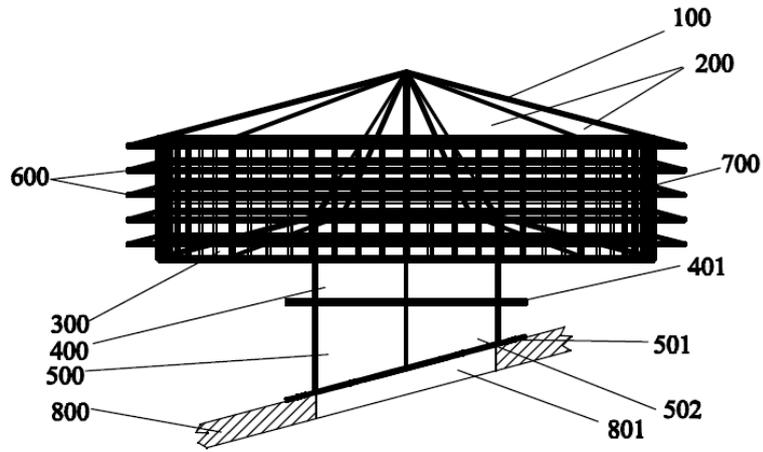


FIGURE- 1

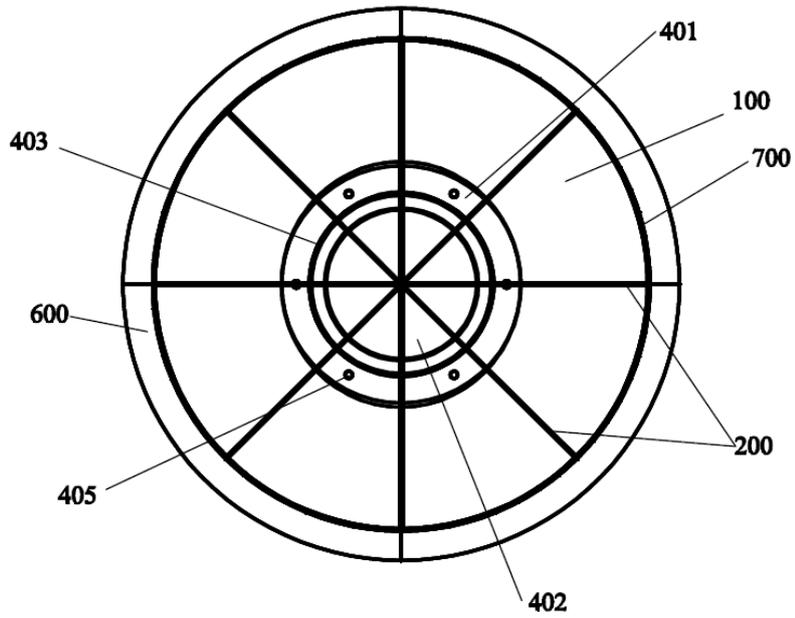


FIGURE- 2

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Sheet 4/2

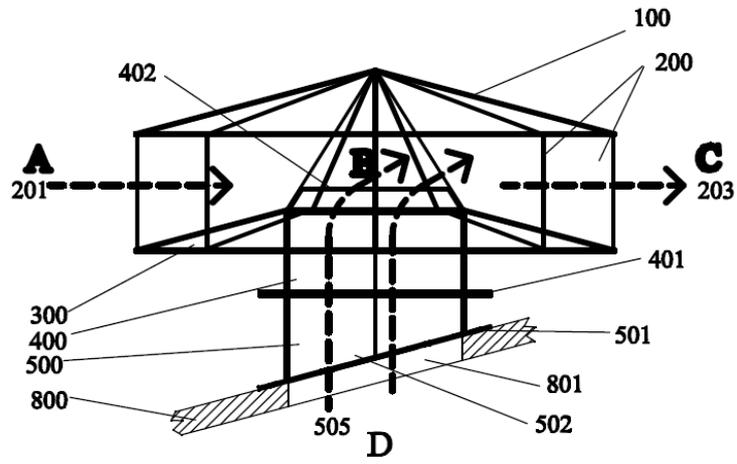


FIGURE-3

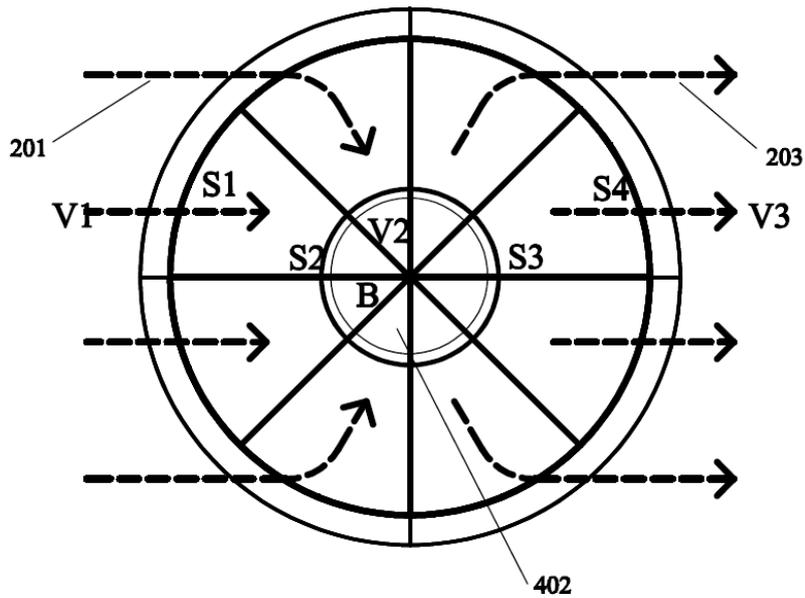


FIGURE-4

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Sheet 4/3

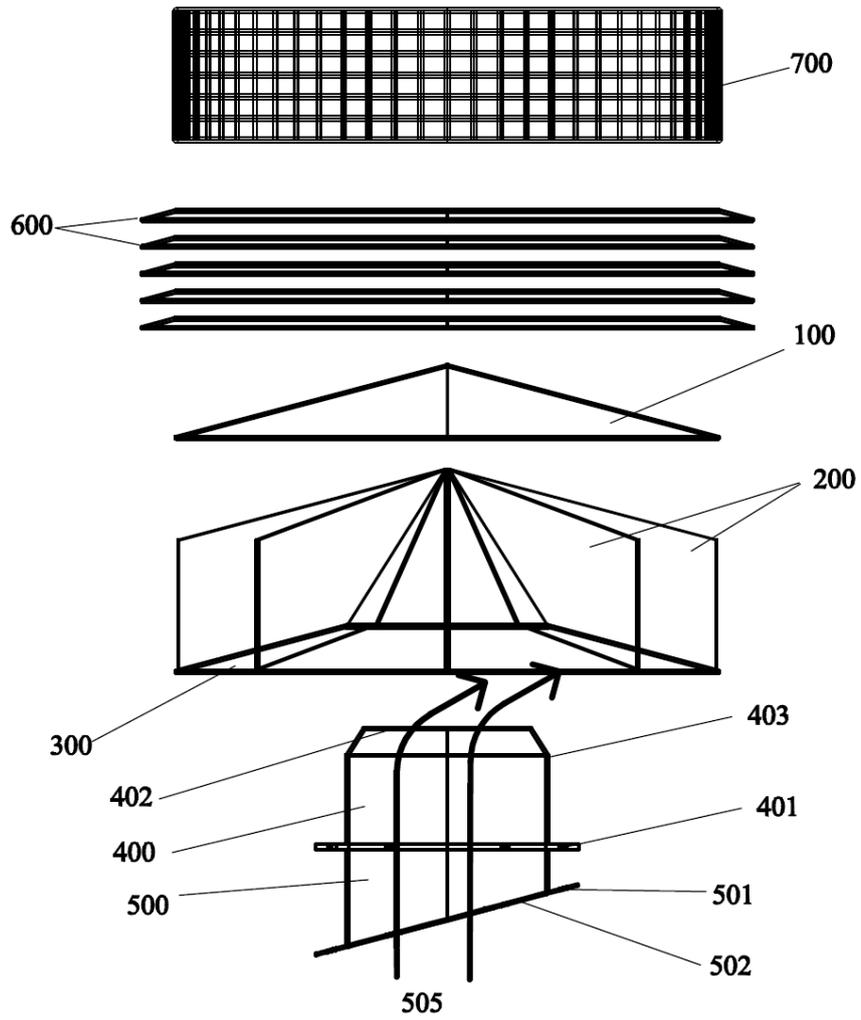


FIGURE-5

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Sheet 4/4

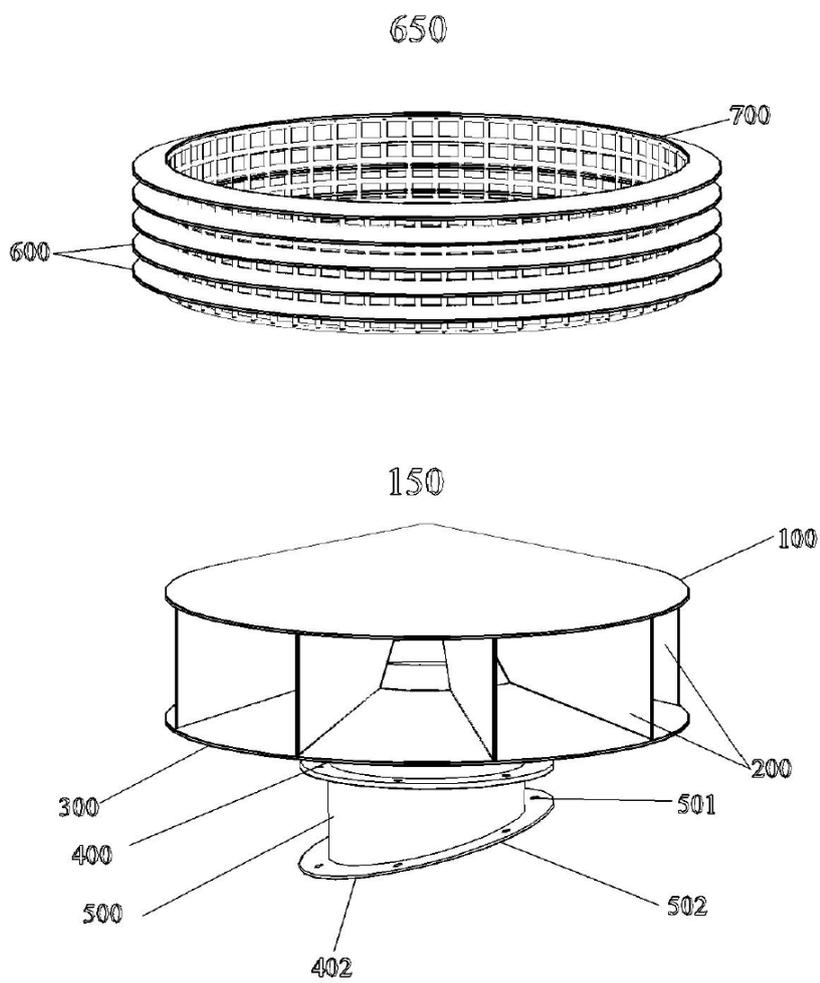


FIGURE-6