

No. 644,335.

Patented Feb. 27, 1900.

R. H. SCHUMACHER.
VENTILATOR.

(Application filed Nov. 15, 1898.)

(No Model.)

2 Sheets—Sheet 1.

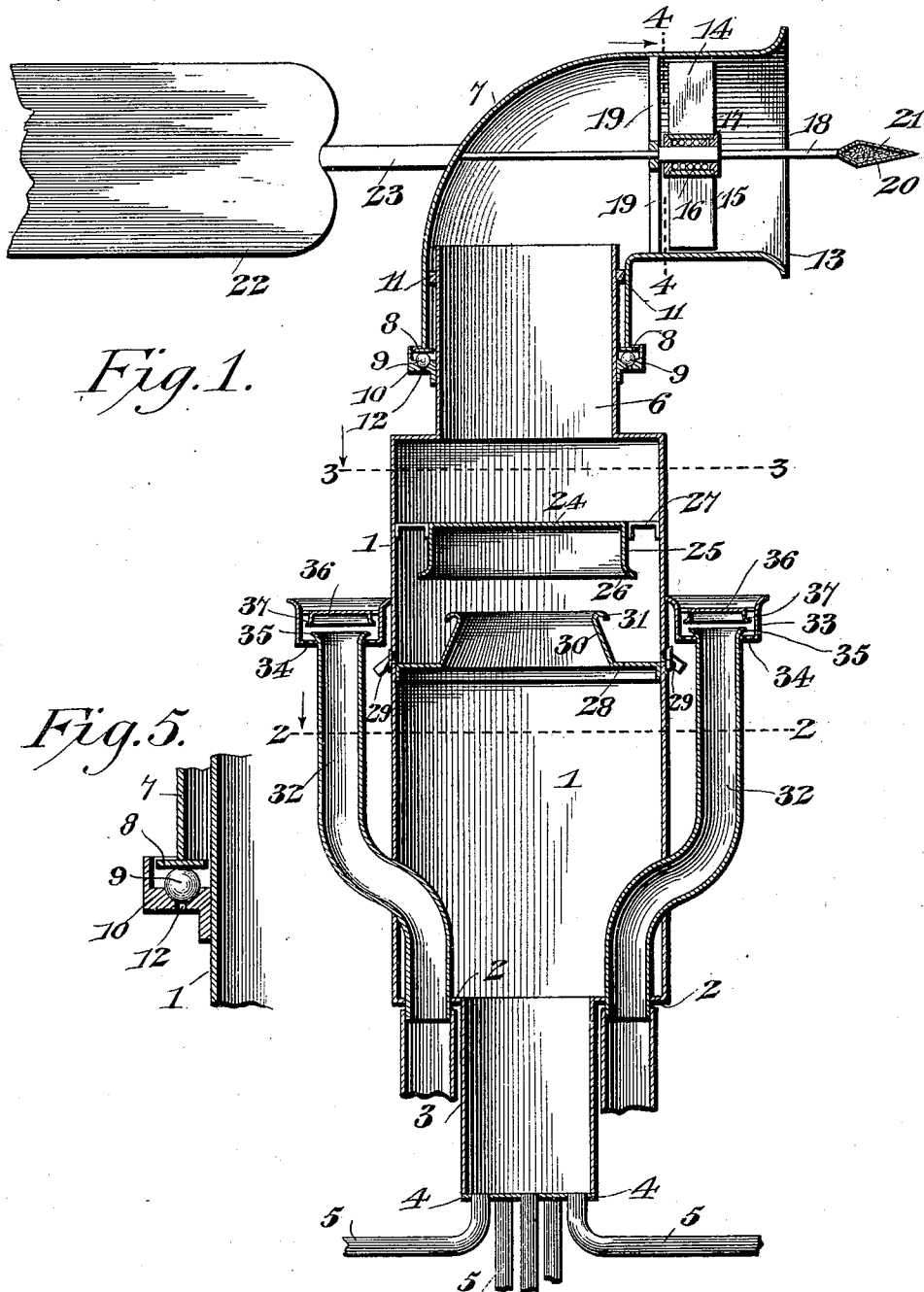


Fig. 1.

Fig. 5.

Witnesses

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Fig. 3.

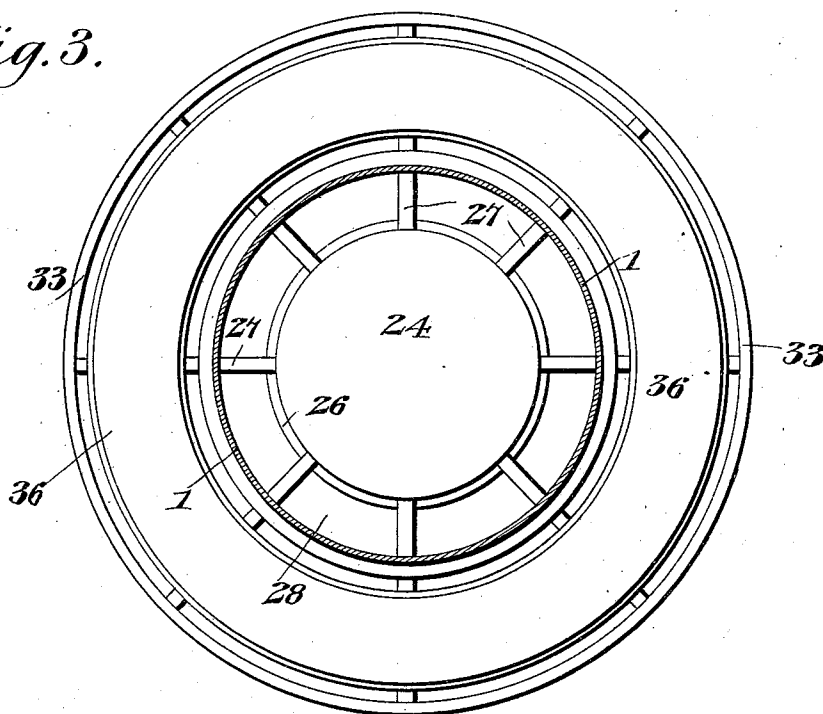


Fig. 2.

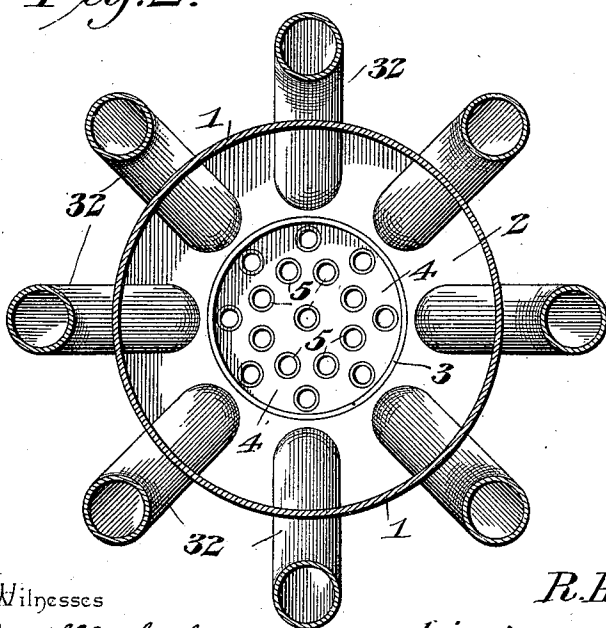
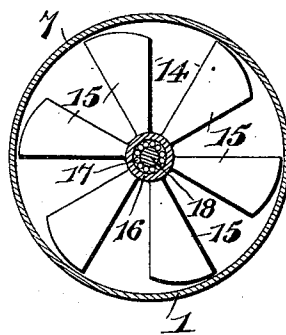


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

ROBERT H. SCHUMACHER, OF NAVASOTA, TEXAS.

VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 644,335, dated February 27, 1900.

Application filed November 15, 1898. Serial No. 696,551. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. SCHUMACHER, a citizen of the United States, residing at Navasota, in the county of Grimes and State of Texas, have invented a new and useful Ventilator, of which the following is a specification.

This invention relates to ventilators designed to be applied to the roofs of buildings and other structures to provide means for insuring a proper ventilation of one or more rooms throughout the building by providing for maintaining a constant circulation of fresh or cold air into the building and an escape for the heated and vitiated air.

To this end the invention contemplates an improved construction of house-ventilator having simple and efficient means for forcing a large volume of air into a house or building, so that it can be distributed throughout the various rooms or apartments thereof, while also insuring the proper exhaust or outlet for the heated and vitiated air, thereby causing a continuous circulation of the air. In carrying out this object the invention provides a novel form of hood or cap for the ventilator which will automatically adjust itself in the direction of the wind in the manner of a weather-cock and will also provide for a forced downdraft of the cold or fresh air.

Another feature of this invention is improved means for effectively excluding the rain from the inlet and exhaust passages of the ventilator.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

While the essential and characteristic features of the invention are necessarily susceptible to modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which--

Figure 1 is a vertical longitudinal sectional view of a house-ventilator constructed in accordance with the present invention. Fig. 2 is a cross-sectional view on the line 2 2 of Fig. 1. Fig. 3 is a similar view on the line 3 3 of Fig. 1. Fig. 4 is a similar view on the line 4 4 of Fig. 1. Fig. 5 is an enlarged de-

tail sectional view of the ball-bearing support for the revoluble elbow-hood.

Referring to the accompanying drawings, the numeral 1 designates a stationary upright cold-air trunk, which is preferably made in a cylindrical form and is designed to be supported on the roof of a house or building by any of the well-known means, and in the present invention the said cold-air trunk 1 forms a downdraft-flue for the passage of cold or fresh air which is to be circulated into the building.

To provide for conducting the cold air into the house or building to be ventilated, the cold-air trunk 1 has projected from its lower end 2 a supply-pipe 3, which when only a single room or apartment is to be ventilated is designed to have coupled thereto a single ventilating-pipe of the same diameter; but ordinarily the ventilator is designed to supply a number of rooms with fresh air, and to carry out this object the bottom pipe extension 3 of the cold-air trunk is provided with an end plate 4, closing its lower end and having fitted thereto the upper ends of a plurality of distributing-tubes 5, which are carried through the walls or in any other desirable way into the different rooms, so that each room will have a separate and independent supply-pipe connection with the main cold-air trunk of the ventilator.

The upright cold-air trunk 1 has projected from the upper end thereof a reduced supporting-neck 6, which provides for the support of the revoluble elbow-hood 7 of the ventilator. The vertical or pendent portion of the revoluble elbow-hood 7 loosely encircles the neck extension 6 of the trunk and is provided at its lower edge with a horizontal bearing flange or plate 8, which loosely bears on top of a series of bearing-balls 9 or similar antifriction-bearings, which are preferably made of vitreous or other equivalent material which will not corrode under the action of the weather. The balls or antifriction-bearings 9, which provide a loose antifriction-support for the lower end of the hood 7, are loosely housed within a bearing-cup 10, fitted to the neck extension 6 and encircling the exterior portion thereof. In addition to carrying the ball-bearings or equivalent support for the revoluble hood 7 the neck extension 6 is further provided near its upper end with

an exterior bearing-ring 11, which serves to properly space the hood from the neck 6, so that the hood will always remain perfectly centered, and thereby be susceptible to the slightest pressure of the wind. In connection with the bearing-support for the revoluble hood 7 the exterior annular bearing-cup 10 is provided in the bottom thereof with a plurality of drain-openings 12, which carry off accumulations of water, and thereby serve to keep the bearings perfectly clean.

The horizontal portion of the revoluble hood 7 is provided with a flared or bell-shaped inlet-mouth 13, which serves to collect a large volume of cold air and concentrate the same upon the rotary fan-wheel 14, arranged in a vertical plane within the upper horizontal portion of the hood. The rotary fan-wheel 14 essentially comprises a plurality of radial obliquely-set fan-blades 15, which are disposed at such an angle as to insure a rotation of the fan by the slightest breeze, and said fan-blades radiate from the central hub 16, housing therein balls or equivalent antifric-tion-bearings 17, which provide for the ball-bearing support of the fan on the horizontal shaft-rod 18. The shaft-rod 18 is fitted horizontally and centrally within the upper portion of the revoluble hood and passes centrally through the transverse brace-bar 19, arranged adjacent to and at one side of the fan-wheel. The outer end of the shaft-rod 18 projects beyond the mouth of the hood and is formed with a pointed or arrow-head extremity 20, which is preferably made hollow and filled with suitable weight material 21, so as to balance the weight of the vane or tail-plate 22, having a rigid arm connection 23 with the exterior of the revoluble hood 7 in alignment with the shaft-rod 18. The shaft-rod, in combination with the vane 22, constitutes a weather-cock construction which will provide for pointing the revoluble hood in the direction of the wind, so that the wind or air currents will pass directly into the mouth 13 and through the fan 14. The said fan will thus be caused to revolve and will augment the volume of cold or fresh air which passes downward through the cold-air trunk and into the pipe or pipes for distributing the air into the room or rooms of the building.

To provide for intercepting the passage of rain, snow, or sleet through the air-trunk 1, the said trunk has arranged within the top portion thereof a horizontal protective shield 24, which is in the form of an inverted cup of a less diameter than the trunk 1 and provided with a straight wall 25, having an outturned lower edge 26. The shield 24 is centered and supported within the trunk 1 by means of the brace or equivalent connections 27 between the shield and the adjacent sides of the trunk, and the pendent wall 25 of said shield overhangs the interior annular drain-gutter 28, fitted to the inner wall of the trunk. The interior annular drain-gutter 28 has suitable drain connections 29 therewith, which com-

municate with the exterior of the trunk to provide for carrying off accumulations of water, and said gutter is closed at its inner side by an upwardly-convergent annular flange 30, with an inturned upper edge 31, which serves to assist in properly retaining the water and at the same time facilitate the free passage of air through the trunk.

The protective shield 24 is spaced a distance above the interior gutter 28, so that the water which strikes the top of the shield will drain from the pendent flange 25 thereof directly into the gutter, while at the same time the incoming cold air has a free passage around the protective shield and between the contiguous edges of its flange and the flange of the gutter.

The upright cold-air trunk 1 supports a plurality of exterior exhaust-tubes 32 for the heated and vitiated air within the building. These tubes are grouped in a circular series around the exterior of the trunk 1 and have their lower ends pass through the bottom of the trunk exterior to the pipe extension 3 at its lower end. The lower end of each of said tubes 32 exterior to the pipe extension 3 is designed to have coupled thereto an independent ventilating-pipe, which leads to one of the rooms of the building, and in this way it will be seen that the ventilator provides a separate and independent exhaust connection for the different rooms of the building, so as to carry off the heated and vitiated air as it is displaced by the cold or fresh air, which is circulated in the manner already explained.

The upper vertical portions of the exterior exhaust-tubes 32 are fitted in the bottom of and open into a substantially U-shaped exterior annular drain gutter or trough 33, which encircles and is secured to the exterior of the cold-air trunk 1. The said exterior annular drain-gutter 33 is provided in the bottom thereof with the drain-openings 34 for the escape of accumulations of water, and at this point it will be observed that at their upper ends the tubes 32 are provided with flanges 35, projecting above the bottom of the trough 33 to prevent water from running into the tubes. In order to prevent the direct passage of rain, snow, or sleet into the tubes 32, the latter have arranged over their open upper ends a weather-cap 36. This weather-cap 36 is suspended by suitable means within the plane of the trough 33 and is of a less width than the same, which permits the free escape of the heated and vitiated air from the exhaust-tubes, and the said weather-cap 36 is provided with pendent side flanges 37, which cause the rain to be deflected directly into that portion of the gutter 33 having the drain-openings.

From the foregoing it is thought that the construction, operation, and many advantages of the improved house-ventilator will be readily apparent to those skilled in the art without further description, and it will be understood that changes in the form, proportion,

and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

5 Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. A ventilator comprising a vertical wind-trunk, means for augmenting a downdraft of
10 cold air therethrough, a pipe extension of less diameter than said wind-trunk, communicating directly with the lower end thereof, and having branched distributing-tubes, a series
15 of vitiated-air flues bent to extend into and through the lower end of the wind-trunk and having their upper ends grouped around the outside thereof, a drain-gutter supported
20 around the outside of the wind-trunk and receiving the upper ends of said vitiated-air flues, and weather-caps supported by said drain-gutter over the open ends of the vitiated-air flues, substantially as described.

2. In a ventilator, an upright air-trunk having an interior annular drain-gutter closed at
25 its inner side by an upwardly-convergent annular flange, and a shield arranged horizontally above the gutter and having a pendent annular flange overhanging the same, substantially as set forth.

30 3. In a ventilator, the combination of an upright air-trunk having a distributing-pipe connection at its lower end, a plurality of exhaust-tubes arranged exterior to and sup-

ported by said trunk, and a weather-protect-
35 ing device supported by the trunk on the exterior thereof and having connection with the upper ends of said exhaust-tubes, substantially as set forth.

4. In a ventilator, the combination of an up-
40 right cold-air trunk provided with an exterior annular drain-gutter having bottom drain-openings, a plurality of exhaust-tubes arranged exterior to and supported by said trunk, and having their upper ends project-
45 ing through the bottom of said gutter, and a flanged weather-caps supported within the gutter above the upper ends of said exhaust-tubes, substantially as set forth.

5. A ventilator comprising a vertical wind-trunk, a drain-gutter supported within the
50 wind-trunk and provided with an upwardly-projecting flange and with drain-ports which open through the wind-trunk, a shield supported above the drain-gutter and within said wind-trunk and having a depending flange
55 arranged concentric with the flange of the drain-gutter, and a cowl revolvably mounted on the wind-trunk, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
60 the presence of two witnesses.

ROBERT H. SCHUMACHER.

Witnesses:

EWING LEONARD,
C. S. TALIAFERRO.