W. F. WARDEN.

VENTILATOR.

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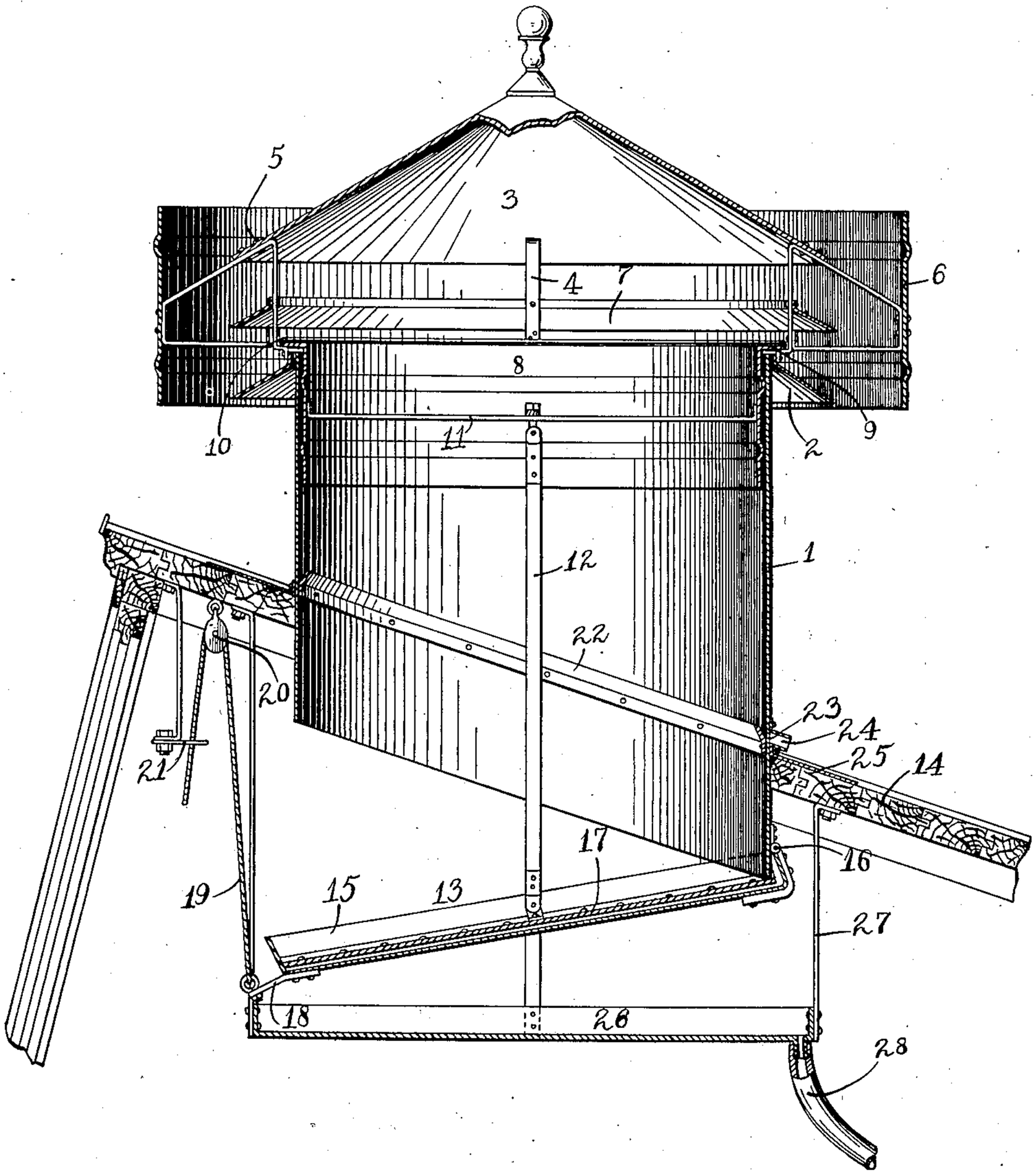
925,252. **Patented June 15, 1909.**



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UNITED STATES PATENT OFFICE.

WILLIAM F. WARDEN, OF AKRON, OHIO.

VENTILATOR.

No. 925,252. Specification of Letters Patent. Patented June 15, 1909.

Application filed April 25, 1908. Serial No. 429,110.

To all whom it may concern:

Be it known that I, WILLIAM F. WARDEN, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Ventilators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to ventilators of the type disclosed in Patent No. 677,512, issued July 2, 1901, wherein a sliding damper is employed in conjunction with the air shaft to vary the size of the air port. In using ventilators in weave sheds, it is necessary to maintain the temperature substantially constant and relatively high. Ventilators as ordinarily constructed are inefficient, particularly in cold and windy weather, as it is practically impossible to prevent some leakage through such dampers at all times and especially at such times as the winds are high. It is also impossible in such ventilators to maintain, in cold weather, the temperature which is necessary in the operation of such sheds, which temperature should not vary between the limits of 80 and 85 degrees Fahrenheit. A further serious difficulty in the employment of ventilators with such sheds has arisen from the condensation which takes place on the air shaft and which, dropping down into the building, ruins the fine machinery and the goods in process of manufacture.

It is the object of this invention to provide a ventilator which, when occasion may require, may be closed to prevent the escape of air therethrough but which, in warm weather, can be operated for ventilating purposes.

A further object of the invention is to provide a ventilator which will positively prevent the discharge of water of condensation therefrom.

Generally speaking, the invention may be described as consisting of the combinations of elements embodied in the claims hereto annexed and illustrated in the drawing, wherein the figure illustrates a vertical sectional view taken through a ventilator constructed in accordance with my invention, showing the same applied to the roof of a shed or other building.

Describing the parts by reference numerals, 1 represents the air shaft of my ventilator, said shaft being provided at the upper end thereof with a downwardly inclined deflector 2. The top of the air shaft is covered by means of a hood 3, the lower end of which is of greater diameter than the air shaft, whereby it overhangs said shaft and provides a deflector at the top of the air port. The hood 3 is supported from the air shaft by means of a plurality of light metallic frames 4, the lower ends whereof are connected to the top of the air shaft. The upper ends of the frame support the hood, as by means of rivets 5. Each frame comprises an inner vertical member, an outer vertical member, a downwardly inclined member, and a substantially horizontal member. The hood is secured to the inclined members of the frames while the outer sleeve 6, which surrounds and incloses the air port, is secured to the outer vertical members of the frames.

7 denotes an intermediate deflector similar to deflector 2, which is secured to the inner vertical member of each frame, as by means of rivets.

Within the air shaft 1, there is mounted a sliding damper 8. This damper is preferably fitted within the air shaft and is provided at its upper end with an outwardly projecting ledge 9 which engages the top of the shaft when the damper is lowered and supports the damper in its lowered position. The outer end of flange 9 is rounded inwardly, as shown at 10, the diameter of such flange being such that the damper may be raised and lowered without binding against the frames 4 or the rivets employed with such frame. This binding effect is further obviated by rounding the outer periphery of the ledge, as shown.

Damper 8 is operated by suitable means engaging the cross bars 11 at their points of intersection, said cross bars having their outer ends riveted or otherwise suitably secured to the damper. For this purpose of so operating said damper, I provide a link 12, the upper end whereof is pivotally connected with the cross bars 11 and the lower end whereof is pivotally connected to a bottom damper 13.

As will be noted from an inspection of the drawing, the bottom of the air shaft is beveled or inclined, being shown as substantially parallel with the roof 14 of the shed or other building in which the ventilator may be installed. The damper 13 comprises a lid-shaped body having an upstanding flange 15 adapted to fit over the bottom of the air shaft. The damper is pivoted to the air shaft above the bottom thereof, the pivot

being located above the lowest portion of the inclined bottom of said air shaft. This pivot is indicated at 16. Within the bottom of the damper 13 there is located a lining 17 which coacts with the inclined bottom of the air shaft to form a tight joint therewith. At the end opposite pivot 16, damper 13 is provided with a lug or arm 18, to the outer end of which there is attached a rope or cord 19 which may be led over a pulley 20 for the purpose of raising and lowering dampers 8 and 13 together.

21 denotes a clip or similar securing means for the rope or cord 19.

The flange 15 will be given such an inclination with respect to the bottom of the damper 13 as to enable it to fit more or less closely the lower end of the air shaft.

For the purpose of preventing the moisture produced by the condensation on and within the air shaft from entering the shed or other building to which the ventilator may be applied, I provide the following construction:—22 denotes a trough which is secured to the inner wall of the air shaft, said trough being inclined. As illustrated, the inclination of the trough corresponds to the inclination of the roof 14, the trough being located slightly above said roof. This trough is preferably of sheet metal and may be secured to the air shaft by riveting. The air shaft 1 is provided with an aperture 23 corresponding to the lowest portion of trough 32 and with a spout 24, whereby any water of condensation that may collect within said trough may be discharged onto the roof of the shed, flashing 25 being provided at this point to prevent leakage. This trough will collect all water of condensation that may accumulate within the interior of the air shaft thereabove and deliver the same onto the roof. Water of condensation that may form within said shaft below said trough will be largely collected within the damper 13 and such water, together with such water of condensation as may collect on the exterior of the air shaft that is within the building and such water as may collect on the outside of damper 13 will be discharged into the drip pan 26, which is located below the ventilator. This drip pan may be suspended from the roof or ceiling of the building by means of straps 27 and will be provided with an outlet pipe 28 which will discharge the condensation at any desired point.

From the foregoing description, the operation of my invention will be clear. By means of rope or cord 19, the dampers 8 and 13 may be operated simultaneously to produce more or less circulation through the air shaft. The parts will, of course, be so proportioned that, when the top of damper 8 engages the hood 3, closing the air port, damper 13 will be in close engagement with the bottom of the air shaft.

When it is necessary that there shall be no circulation through the ventilator in order to maintain the temperature within the shed or building at the requisite degree, my ventilator may be so closed as to prevent such circulation. When desirable to ventilate, the two dampers may be operated as conveniently as a single damper, and the ventilator will operate in the usual manner. Furthermore, any objection to the discharge of the water of condensation within the building or shed will be effectively overcome by my construction.

Having thus described my invention, I claim:

1. A ventilator having an air shaft and an air port, a sliding damper coacting with said air shaft to control said port, a damper adapted to close the bottom of said air shaft, and connections for operating said dampers simultaneously, substantially as specified.

2. A ventilator having an air shaft and an air port, said air shaft being provided with an inclined bottom, a sliding damper controlling said port, a damper adapted to close the bottom of said air shaft, and connections for operating one of said dampers from the other, substantially as specified.

3. In a ventilator, the combination of an air shaft having an air port, a sliding damper coöperating with said port, a damper adapted to extend across said air shaft to close the same, and connections for operating said dampers simultaneously, substantially as specified.

4. A ventilator comprising an air shaft having an air port, a sliding damper coöperating with said port, said shaft having an inclined lower end, a damper pivotally supported from the lower portion of said inclined end, and connections for operating one of said dampers from the other.

5. A ventilator comprising an air-shaft having an air port, a sliding damper coöperating with said port, a damper coöperating with the lower end of said air shaft, means for operating one of said dampers, and connections between said dampers whereby the movement of one will operate the other.

6. A ventilator comprising an air shaft having an air port, a sliding damper coöperating with said port, a pivoted damper adapted to open and close said air shaft, and connections for operating said dampers simultaneously, substantially as specified.

7. A ventilator comprising an air shaft having an air port, a sliding damper coöperating with said port, said air shaft having an inclined bottom, a damper adapted to close said bottom and pivoted adjacent to the lower end thereof, a link connecting said dampers, and operating means connected with the lower damper, substantially as specified.

8. A ventilator comprising an air shaft

having an air port, a sliding damper coöperating with said port, a damper adapted to close the bottom of said shaft, a link connecting said dampers, and operating means connected with one of said dampers, substantially as specified.

9. A ventilator comprising an air shaft having an air port, a sliding damper coöperating with said port, a damper for the bottom of said air shaft and pivoted at one end thereof, a connection between said dampers, and operating means connected with the end of the lower damper which is opposite the pivot, substantially as specified.

10. A ventilator comprising an air shaft having an inclined bottom, a damper pivoted at the lower end of said bottom and having an upwardly projecting flange, and a packing within said flange, substantially as specified.

11. A ventilator comprising an air shaft, a pivoted damper for the lower end of said shaft, said damper having an upwardly projecting flange adapted to embrace the lower end of the shaft, and a packing within said flange, said packing comprising a lining applied to the bottom of said damper within said flange, substantially as specified.

12. A ventilator comprising an air shaft having an inclined bottom, and a damper pivoted at the lower end of said bottom and adapted to seat against said bottom, said damper being provided with an upwardly projecting flange adapted to fit around the bottom of the air shaft, substantially as specified.

13. The combination, with an inclined roof, of a ventilator comprising an air shaft extending through said roof, said ventilator being provided on the inner wall thereof with an inclined trough having its lowermost portion slightly above said roof and provided with an outlet communicating with the lowermost portion of said trough and extending through the air shaft, and means located below said trough for collecting water of condensation, substantially as specified.

14. In a ventilator, the combination of an air shaft, a plurality of frames connected to the air shaft and each having an outwardly projecting portion and a vertical inner member extending upwardly from such portion, a hood supported by the upper portions of said frames, a deflector interposed between said hood and the top of the shaft and supported by the vertical members of said frames, and a sliding damper in the upper end of the air shaft provided with an outwardly projecting flange having a rounded outer edge, substantially as specified.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

WILLIAM F. WARDEN.

Witnesses:
SELMA JOHNSON,
GRACE K. SMITH.