G. M. REDGATE.

VENT HEAD.

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1,354,623.

Patented Oct. 5, 1920.

Fig. 1.

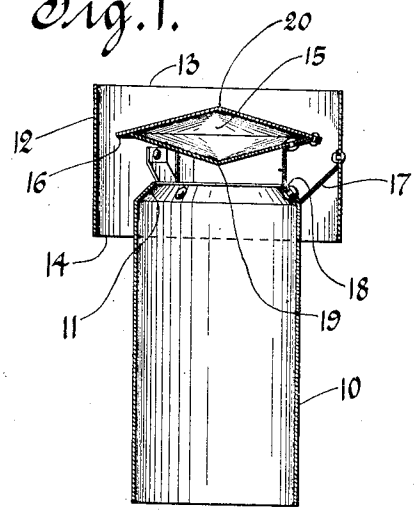


Fig. 3.

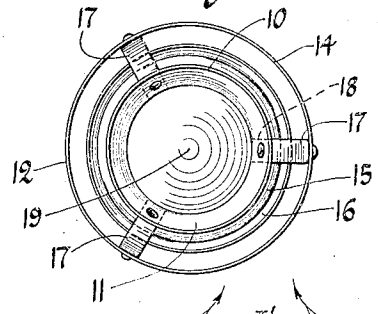


Fig. 4.

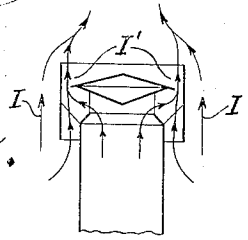


Fig. 2.

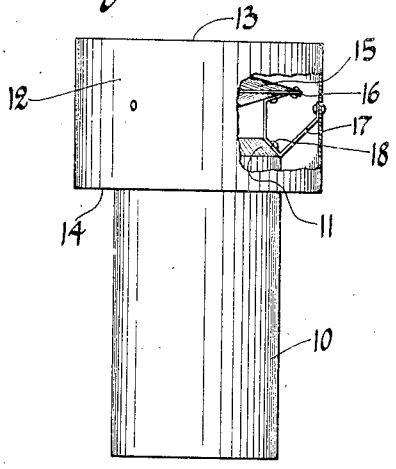


Fig. 5.

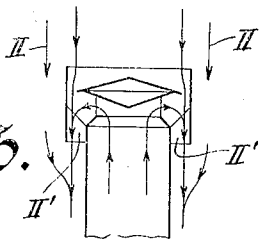
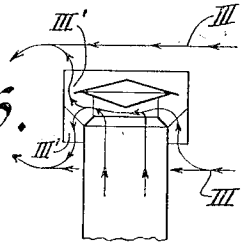


Fig. 6.



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UNITED STATES PATENT OFFICE.

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VENT-HEAD.

1,354,623. Specification of Letters Patent. Patented Oct. 5, 1920.

Application filed February 20, 1920. Serial No. 360,088.

To all whom it may concern:

Be it known that I, GEORGE M. REDGATE, a citizen of the United States, and resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Vent-Heads, of which the following is a specification.

This invention relates to vent heads adapted to form tops of chimney or ventilation orifices.

The primary object of my invention is to provide a device of this class which will facilitate the creation of an outward draft from within a chimney or ventilation conduit no matter from which direction wind may strike it.

Another object of my invention is to so construct my device as to cause the wind passing by to form a partial vacuum within my device in a part thereof disposed opposite the side from which wind may strike it.

The above and still further objects of my invention will be more fully apparent from the following description and the accompanying drawings, forming part of this specication, in which:

Figure 1 is an elevation, in section, of my device.

Fig. 2 is an elevation of same illustrating its outer appearance.

Fig. 3 is a bottom view of my device.

Figs. 4, 5, and 6 are diagrammatical views of my device showing its working under various wind conditions.

Referring to the drawings, 10 designates a duct of a cylindrical, rectangular or otherwise conveniently shaped form, the upper end of which terminates into a tapered offset 11. Surrounding the tapered duct end and extending beyond the same is a casing or jacket 12 having straight end faces 13 and 14 shaped either to correspond with the form of the duct or to suit any other desired condition. Within the casing and surrounded thereby, is provided a double-tapered deflector 15, the vertical center line of which coincides with that of the duct. At its main horizontal center plane the deflector is equipped with a drip-flange 16.

The casing 12 and the deflector 15 as well, are suspended in their relative position by brackets 17, one arm of which supports the casing, the other the deflector, while their middle portion 18 is attached to the tapered end of the duct.

As may be seen from the drawings, the main area of the deflector at its center plane is far larger than that of the duct end. The distance between the lower apex 19 of the deflector to the upper end of the duct is equal to the distance between the upper apex 20 and upper face 13 of the casing.

Furthermore, these distances are equal to the distance or distances between the inner wall or walls of the casing 12 and the drip-flange. This free space is equal in area to that of the upper duct orifice, while the area of the space between the duct body 10 and the lower portion of casing 12 is approximately double in size to the area between casing and drip-flange.

The height of the casing may be distinctly divided into three equal parts. One third of the casing reaches above the center plane of the deflector, the second third extends from this plane to the top of the duct, while the last third terminates below the duct orifice.

The foregoing features of construction are of vital importance to the proper working of such device, as any other similar construction will fail to accomplish the results desired.

There are a number of inventions patented and a still greater number made, the construction of which might seem at a glance similar to that of my device. My thirty years' experience in sheet metal work brought me into intimate contact with such and similar devices and afforded to me the opportunity of closely examining and experimenting with them under different weather conditions. I came to the conclusion, however, that none of the claims made for the other devices may be sustained by practical demonstration.

I have found through thorough experiments that it is essential to employ a flangeless, straight-walled outer casing instead of other shapes or combination shapes as have been made by others. The entire working principle is based upon the action of the wind striking the casing.

In order to create a suction within the duct 11 at any time, no matter from which direction the wind blows, a partial vacuum has to be formed within the casing. This vacuum is created not by the air striking or passing through my device, but by the air passing by the casing.

In Fig. 4, air is indicated blowing from

below. The arrows I represent the air passing by, and the partial vacuum created thereby forms at the upper portion I′ of the casing. This vacuum causes a draft in upward direction, and the gases or fumes issuing from the duct are forced to pass around the deflector and upward into the rarefied space I′ and out.

When the wind blows in opposite direction, as indicated at II in Fig. 5, the partial vacuum is formed at the space indicated at II′ around the duct.

In Fig. 6 the wind indicated by III is blowing in a horizontal plane and creates a partial vacuum at III′ into which the gases from the duct are sucked.

It will be seen that the vacuum forms at the opposite side from that struck by the wind.

While disclaiming the different similar devices of whose presence I am well aware, I consider my invention a marked improvement in the art not to mention its practical, tested value.

The drawings show a device of generally cylindrical form; however, it is self-understood that, although the cylindrical construction is the cheapest, my device may be made in any desired shape when the principal features of construction are observed.

Having thus described my invention, I claim:

1. A vent head, comprising in combination, a duct provided with a reduction offset, a double-tapered deflector suspended above said offset and having a greater main area than the latter, a casing having straight-cut ends surrounding the upper portion of said duct and said deflector in such a manner as to provide an area between its walls and said deflector which is equal to the area of the offset duct end, said deflector being disposed so that the distance from its upper apex to the upper edge of the casing is equal to that from its lower apex to the upper edge of said duct.

2. The combination in a vent head, of a duct having a tapered upper end, a double-tapered deflector provided with a drip-flange, and a casing surrounding said upper duct-end and said deflector, the latter being suspended above the duct in such a way that the distance between its lower apex and the duct-end is equal to the distance between its upper apex and the top of the casing, and that these distances are equal to the distance between said drip-flange and the inner wall of said casing.

3. A vent head, comprising in combination, a duct having a tapered upper end, a double-tapered deflector suspended above the latter and provided with a drip-flange, the main area of said deflector being greater than the area of the duct end, a casing surrounding said duct end and said deflector leaving a passage between the drip-flange and its walls equal in area to that of the duct end, said casing being so arranged that the distance between its upper straight end and the center plane of the deflector is equal to the distance from the straight lower end of the casing to the upper end of the duct and also equal to that between the upper end of the duct and the center plane of the deflector.

4. A vent head, comprising in combination, a duct provided with a tapered upper end, a straight-faced casing surrounding and extending beyond and spaced from the latter, a double-tapered deflector, provided at its center-plane with a drip-flange, suspended within said casing and above said duct in such a way that its respective apexes are at equal distance from the upper face of the casing and the upper end of the duct, and that these distances are also equal to that between the inner wall of the casing and the drip-flange, and that the area of that space therebetween is equal to the area of the duct end and approximately half of the area formed between the lower casing face and the duct body.

5. A vent head, comprising in combination, a duct having a tapered end, a straight-faced casing surrounding and extending beyond said duct end, a double-tapered deflector, provided with a drip-flange, suspended within said casing and above said duct, centrally between the upper casing face and the duct end, and leaving a space between the casing and the drip-flange equal in area to the duct end and substantially half in area to the space between the duct and the lower end of the casing.

Signed at New York city, in the county of New York, and State of New York, this 26th day of January, A. D. 1920.

GEORGE M. REDGATE.