

DE KERNIA J. T. HIETT.

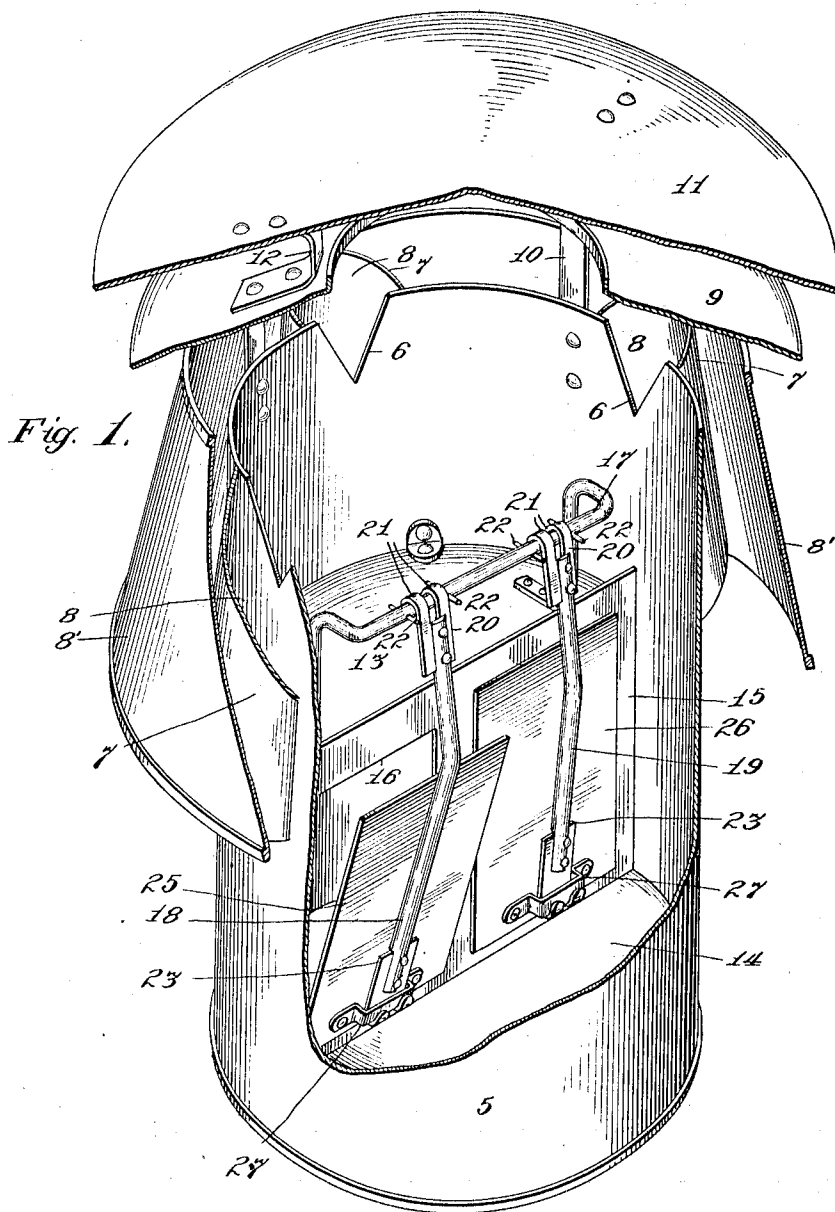
VENTILATOR.

APPLICATION FILED JAN. 6, 1912.

1,053,508.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 1.



Witnesses

*Hilton Lenoir*

*Willie D. Dearborn*

*Inventor*

*DeKernia J. T. Hiett,*

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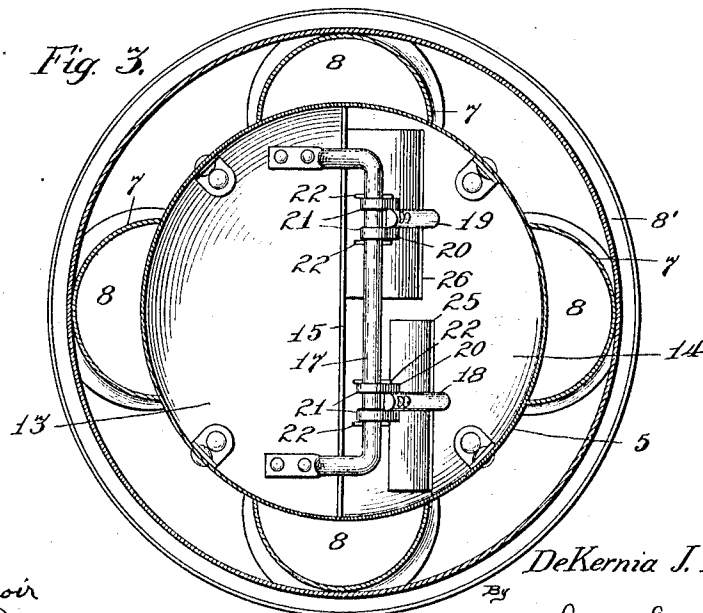
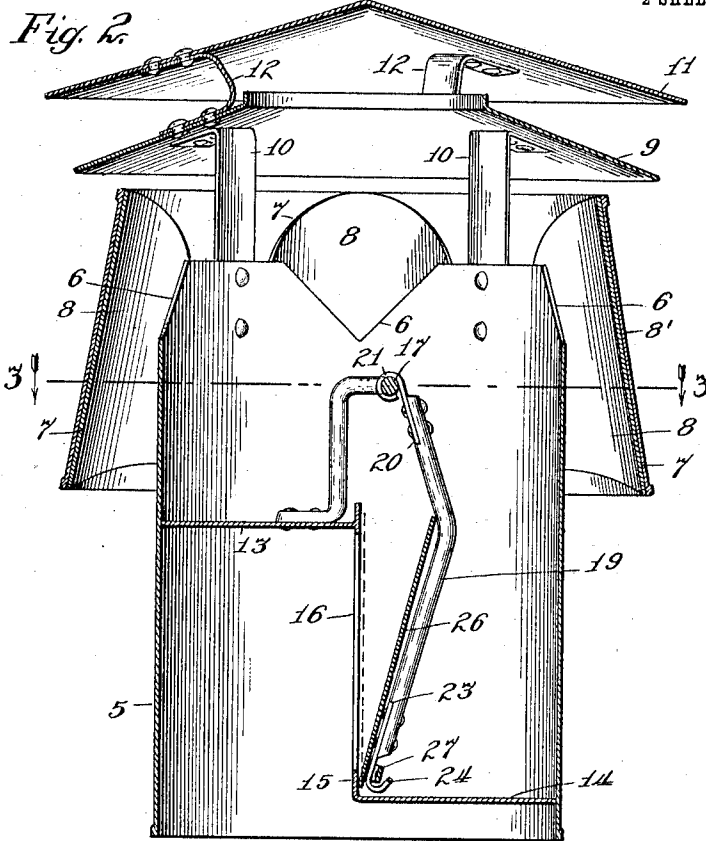
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# UNITED STATES PATENT OFFICE.

DE KERNIA J. T. HIETT, OF CHICAGO, ILLINOIS.

## VENTILATOR.

1,053,508.

Specification of Letters Patent. Patented Feb. 18, 1913.

Application filed January 6, 1912. Serial No. 669,870.

*To all whom it may concern:*

Be it known that I, DE KERNIA J. T. HIETT, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ventilators, of which the following is a specification.

My invention relates to ventilators, particularly to that class of ventilators adapted for application to the tops of chimneys or ventilating stacks for producing educative effect. Under normal conditions this class of ventilators and chimney tops will create sufficient educative effort to overcome any of the slight resistances or back pressures in the stack or ventilating pipe, but under a great many conditions such educative effect will not be sufficient to overcome the back pressure, and the result will be that air will flow downwardly through the stacks or pipes. For example, in buildings divided into rooms where different rooms are each provided with a ventilating pipe terminating in an educative top the door in one room may be opened while the windows are opened in another room, and there will be a sudden out-rush of air from the room whose door has been opened, and the educative effect of the stack and its top will be entirely overcome, and there will be a sudden downflow of air into the room, and dust and dirt collected in the stack will be deposited in the room.

One of the main objects of my invention is to prevent back flow or down draft at any time in chimney stacks or ventilator pipes. This I accomplish by the interposition of check valve mechanism in the chimney or ventilating flue, which check valve mechanism will allow ready outflow of air from the stack but will at all times prevent back flow through the stack.

Another object is to provide such construction and arrangement for the check valve mechanism that the check valve will respond to very slight pressure to either open or close passageway through the stack or ventilator duct, the valves being delicately balanced. The valve mechanism of my invention can be used in connection with any form of eductor top. For example, the valve mechanism could be used in connection with the eductor top mechanism shown in Patent No. 851,942, granted April 30, 1907 to T. Kernchen.

My invention will be fully understood by

reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the upper end of a chimney and the eductor mechanism thereon, parts being broken away to more clearly reveal the arrangement within, Fig. 2 is a vertical diametral sectional view showing the valve mechanism and the eduction mechanism, and Fig. 3 is a sectional view taken from plane 3—3, Fig. 2.

The stack 5 has the V-shaped notches 6 cut at intervals in its top edge, and adjacent each such slot a semi-circular wall 7 so applied to the stack to form with the stack a vertical passageway 8 past the corresponding V-shaped slot, a sleeve 8' surrounding the walls 7. Over the upper ends of the passages 8 a hood 9 is mounted on bars 10 extending upwardly from the stack end, and the central opening 10 of this hood is covered by another hood 11 supported from brackets 12 carried by the hood 9, the hoods acting to deflect air currents across the opening 10 to cause educative effect on the passageways 8 and on the stack itself. With this arrangement there will always be educative effect on the stack under normal conditions,—that is, the educative effect will be sufficient to overcome any of the ordinary resistances or back pressures which might occur in the stack. More serious back drafts will, however, not be overcome by the educative effect, and so will necessarily have to flow down the stack with more or less serious consequence under certain conditions. To overcome this back flow I provide check valve mechanism. Near the outlet of the stack I provide a semi-circular upper partition 13, and below this partition and diametrically opposite therefrom I provide another semi-circular partition 14, the inner edges of the partitions being connected by a vertical wall 15 provided with valve passageways or ports 16. Supported from the top partition is a pivot rail 17, from which are hung two valve supporting pendulums 18 and 19. As shown, each pendulum is secured at its upper end to a pivot plate 20 having the pivot eyes 21 for receiving the rail 17, each plate being locked against longitudinal displacement on the rail by pins 22 driven through the rail. The lower end of each pendulum has secured to it a plate 23 having pivot hooks 24 bent up from its lower edge. The valves 25 and 26 may be of some light sheet metal, and each

valve has secured adjacent its lower edge a pivot bracket 27 which engages in the hooks 24 of the corresponding pendulum.

As best shown in Fig. 2, the pendulums 5 are given a slight bend at a point substantially opposite the upper edge of the valve openings or ports 16, so that under normal conditions the pendulums hang with their lower ends adjacent the wall 15 to allow 10 the valve plates to be swung about their lower pivot and toward the top of the pendulums by the outflowing air. If the conditions should suddenly become abnormal and the eductive effect insufficient to overcome the back pressure the valve plates will immediately be thrown against the wall 15 15 to close the ports 16, thus to prevent any down flow of air from the exterior into the stack, and the down draft is thus immediately checked. When normal conditions are again resumed the eductive effect will predominate, and the outflowing air will again open the valves and will flow out of the stack. Immediately upon closure of the 25 valves any hot air within the stack at that time will be trapped and will be unable to move, and this heated air will greatly assist in reestablishing proper outflow when the valves are again opened.

30 Under normal conditions of outflow there will be sufficient by-pass through the valves when the pendulums hang with their lower ends against the wall 15. Should, however, the eductive effect increase, then the pendulums themselves will swing away from 35 the wall 15, and the valve ports will be much more exposed to allow greater freedom of outflow. In fact, the pendulums and the valves thereon are so delicately pivoted that 40 both pendulums and valve plates will readily follow the movements and pressures of the air, and the valve ports will be quickly and readily opened under proper eductive effect and will be as readily and quickly 45 closed up at any time the back pressure should tend to exceed the eductive effort.

I thus provide improved mechanism which can be associated with any smoke-stack or chimney or ventilator shaft or duct to allow 50 outflow but to prevent any inflow at any time, and the mechanism can be used in any

outlet passageway whose outlet end may or may not be provided with eduction mechanism.

Changes and modifications are of course 55 possible which would still come within the scope of my invention, and I do not therefore desire to be limited to the precise construction, arrangement and combination which I have shown and described, but 60

I claim the following:

1. In combination, a ventilating stack, eduction mechanism at the top of said stack, an upper transverse partition wall extending part way across the stack in one direction and the lower transverse partition wall 65 extending part way across the stack in the opposite direction, a vertical wall connecting the inner ends of said transverse partition walls, said vertical wall having valve 70 ports, a pivot bar suspended above said ports, pendulums suspended from said bar, and valve plates pivoted at their lower ends to the lower ends of said pendulums to be responsive to variations in pressure to open 75 said valve ports to allow outflow from said stack and to close said valve ports against down draft through said stack.

2. In combination, a ventilating stack, a partition wall in said stack having a passageway therethrough, a pendulum pivoted 80 in said stack adjacent said opening, a valve pivoted at its lower end to the lower end of said pendulum for controlling outflow through said passageway, said pendulum 85 being normally in position to hold said valve close to the passageway to enable the valve to close against induction currents and to be limited in its opening movement for eduction currents of ordinary pressure, said 90 pendulum responding to eduction currents of increased pressure to bodily swing the valve away from said passageway to thus increase the outlet passageway.

In witness hereof, I hereunto subscribe 95 my name this 14th day of December, A. D., 1911.

DE KERNIA J. T. HIETT.

Witnesses:

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