

June 13, 1933.

J. B. CLAY

1,913,974

VENTILATOR

Filed Sept. 17, 1930

2 Sheets-Sheet 1

Fig. 1.

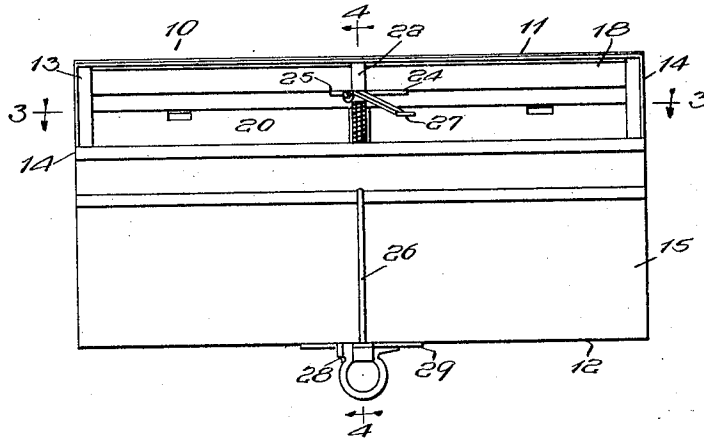
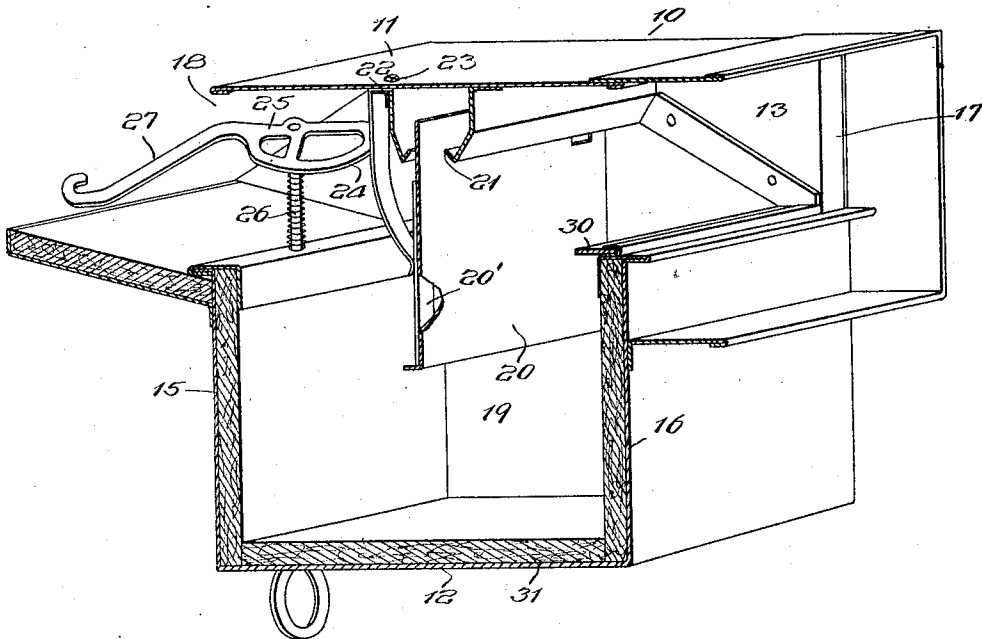


Fig. 2



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Fig. 3.

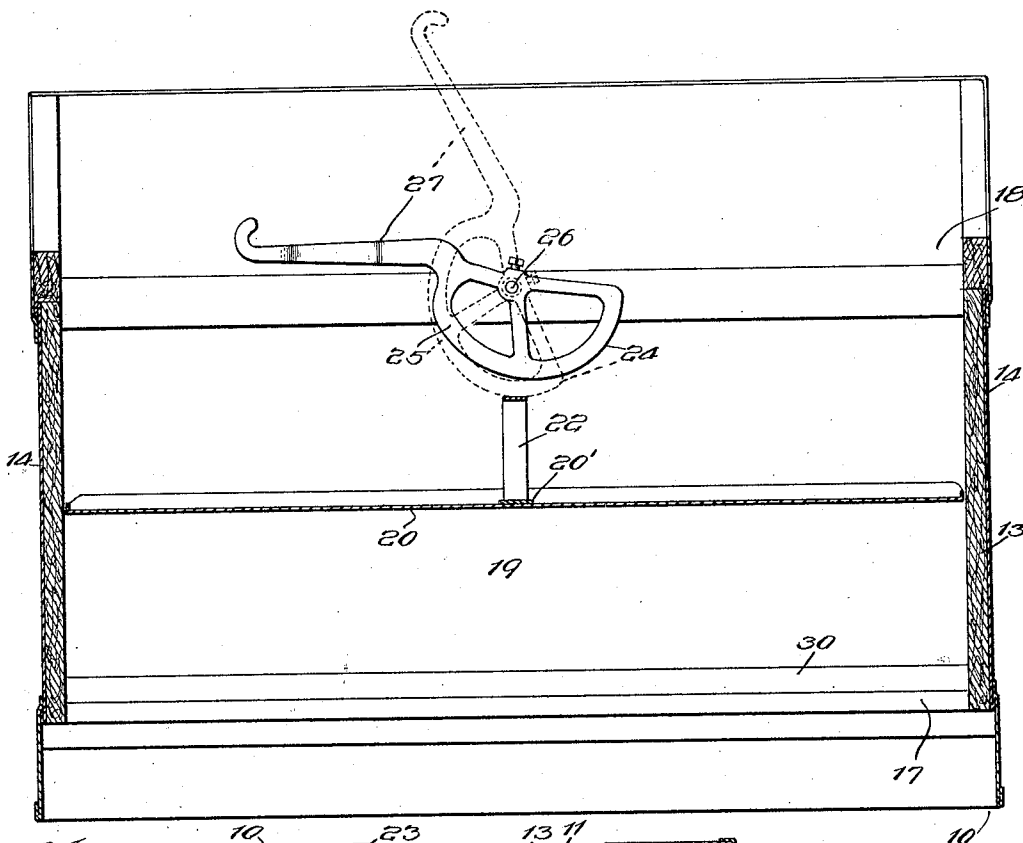


Fig. 4.

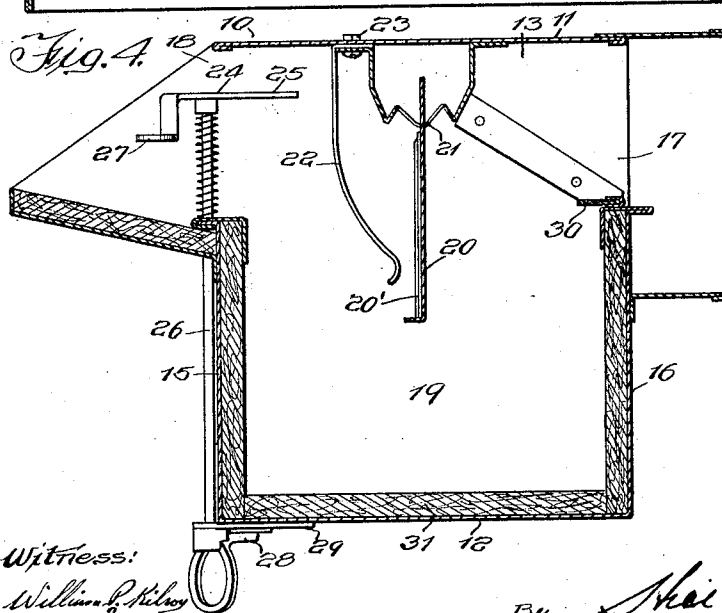
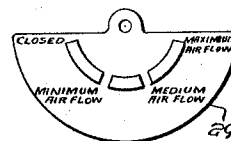


Fig. 5.



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VENTILATOR

Application filed September 17, 1930. Serial No. 482,474.

The invention relates to ventilators and has among its prime objects the provision of a ventilator which will automatically compensate for wind velocity changes as well as changes in the suction or the rate of exhaust from the out-take units of the ventilating system, and automatically control the volume of air passing through the ventilator.

10 The invention has as an additional object the provision of a ventilator having means for automatically compensating for wind velocity changes and means to control the volume of air passing through the ventilator, said ventilator having means associated therewith for controllably varying the resistance to wind pressure to thereby regulate the amount of air passing through the ventilator.

20 In addition, it is an object to combine with a structure such as that just recited a means whereby the means for controlling the passage of air through the ventilator may be manually closed and maintained in this last mentioned position.

25 It is an object of the invention to employ a damper which is movably mounted within the ventilator and which is moved by wind pressure to closing position to thereby regulate the amount of air passing through the ventilator.

30 In addition to the above, it is an object to combine with a damper operable in the manner above described a member which applies a prescribed resistance to movement of the damper and which increases the resistance to said movement as said damper approaches closed position.

35 In addition, it is an object to provide means for controllably varying the resistance of said member and to associate with the means for controllably varying the resistance of said member a means for actuating the movable element to move said element to a closed position and maintain said element in said last mentioned position.

40 It is a further object of the invention to construct a ventilator having the above features so that the element for controlling the passage of air through the ventilator is mov-

able to a position to prevent back drafts through the ventilator.

The invention has these and other objects, all of which will be explained in detail and more readily understood when read in conjunction with the accompanying drawings forming a part hereof which illustrate one embodiment of which the invention is susceptible, it being manifest that changes and modifications may be resorted to without departing from the spirit of the appended claims forming a part hereof.

In the drawings, Fig. 1 is a front view of a ventilator constructed according to the invention;

Fig. 2 is a sectional view showing portions of the device in perspective.

Fig. 3 is a section taken on line 3—3 of Fig. 1.

Fig. 4 is a section taken on line 4—4 of Fig. 1.

Fig. 5 is a view of a device for indicating the position at which the device illustrated in Fig. 3 is set.

The embodiment of the invention illustrated in the drawings contemplates the utilization of a casing 10 comprised of the top wall 11, the bottom wall 12, end walls 13 and 14 and the side walls 15 and 16. The side wall 16 is provided with an opening 17 which produces an air intake opening to the casing. The side wall 15 is provided with an opening 18 through which air entering the casing is introduced to the space to be ventilated. It will be noted that the openings 17 and 18 are located adjacent the upper portion of the walls 15 and 16 and thus provide an air chamber 19 through which air may pass from the opening 17 to and through the opening 18. An element or damper 20 is hingedly connected as at 21 to the top wall 11 of the structure and this element 20 extends downwardly into the chamber 19 and is employed to provide a damper for regulating the amount of air passing through the ventilator. The damper or element 20 has means associated therewith for resiliently resisting or opposing movement of the damper toward the outlet opening 18. This means is designated 22

and, in the present instance, is comprised of a leaf spring which is preferably of stainless steel so as to resist rust. The damper 20 has a strip 20' applied thereto which is preferably of the same character of material as the spring 22. This spring 22 is secured at 23 to the top wall 11 of the casing and extends downwardly toward the chamber 19 and in the path of movement of the element 10 or damper 20.

The structure just explained including the spring 22 and the damper 20 provides a means which will increase resistance to movement of the damper as the wind pressure increases as it is evident that as the damper 20 is moved in the direction of the spring 22, the spring 22 tends to straighten which causes the end of the spring to move toward the free end of the damper or element 20. This movement of the end of said spring relatively to said damper causes the point of application of the resistance and the degree of resistance to be varied relatively to the pivot 21 of the damper and therefore will vary the resistance applied to movement of the damper. The structure including the spring 22 provides a means which resists wind pressures applied to the damper and thus will control movement of the damper toward the wall 15 to vary the space between the damper and said wall through which space air may pass and be discharged through the opening 18.

As before stated, a means is provided for controllably varying the resistance to movement of the damper toward the opening 18. This means is generally designated 24 and includes a cam-shaped member 25 which is mounted upon one end of a rod 26 which is mounted for rotation to provide means for adjusting the cam 25 to various positions with respect to the spring 22. It is manifest that said cam or eccentric may be rotated to any one of several positions in which it cooperates with said spring to assist said spring in resisting movement of the damper 20 and that said cam may be moved so that said cam is ineffective for cooperation with said spring. It is understood that the rod 26 will extend to some point where it is conveniently accessible for actuation by a person.

It is evident that said cam 25 is rotatable to a position in which it will permit the spring 22 to act in a normal manner upon the damper 20 and that said eccentric is rotatable into a position in which it will engage said spring 22 and assist said spring to resist movement of the damper. It is manifest that since the element 25 is of cam shape that said cam provides means for controllably varying the resistance of said spring and consequently the amount of wind pressure necessary to move the damper beyond a prescribed position relatively to the

wall 15 which results in maintaining the area of the opening constant.

As before stated, the device is provided with means for engaging the damper 20 and moving it toward the opening 17 to close said opening and maintain said damper in this last mentioned condition. The means herein shown for accomplishing this last mentioned features includes an arm 27 which, in the present instance, is a part of the cam 25 and is therefore rotatable through the agency of the shaft 26 into and out of cooperative relation with the damper 20. It may be here stated that under normal conditions, the cam and the spring 22 are arranged in spaced relation to each other so that the spring 22 will only apply a normal resistance to the movement of the damper or element 20. The rod 26 is provided with a pointer or indicator 28 which is designed to cooperate with the indicator plate 29 which is provided with indicia to appraise the user of the particular adjusted position which the cam assumes upon rotation of the rod 26.

The opening 17 is provided with a ledge 30 which, in the present instance, is of felt, however, this particular material need not be employed at this point. Said ledge 30 is provided to cooperate with the lower edge of the damper when said damper is moved through the agency of the arm 27 or when a back pressure is applied to the damper.

The casing generally designated 10 is lined with some suitable moisture resisting material and is designated 31 and is employed to prevent condensation upon the exterior of the casing which is occasioned by the relatively cool air passing through the casing and the warm air of relatively high humidity which surrounds the casing. The insulation prevents the occurrence of condensation, frost and corrosion.

From the foregoing description of the structure, it is evident that a means is provided for variably resisting movement of the damper in one direction, which means has means associated therewith for controllably varying the degree of resistance applied by the first mentioned resisting means and that means is also combined with a structure such as that just referred to for moving the damper or element 20 toward the opening 17 and maintaining it in a position to close said opening and thus prevent the passage of air through the ventilator when this is found necessary or desirable.

What I claim as new and desire to secure by Letters Patent is:

1. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operably movable to normally control the air passing through the casing from said inlet to said

outlet, a flexible element providing means for applying yieldable resistance to movement of the damper, and means engageable with said flexible element to resist movement of the damper.

2. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operably movable to normally control the air passing through the casing from said inlet to said outlet, means for resisting movement of the damper, means assisting said first mentioned means to resist movement of said damper, said means providing means for controllably varying the resistance of said first mentioned means, and including means for maintaining said damper closed.

3. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operably movable to normally control the air passing through the casing from said inlet to said outlet and prevent a reversal of direction of flow of air, means for resisting closing movement of the damper and means for controllably varying the resistance of said means.

4. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operably movable to normally control the air passing through the casing from said inlet to said outlet and prevent a reversal of direction of flow of air, means for resisting closing movement of the damper and means for controllably varying the resistance of said means, said last mentioned means having means engageable with said damper for maintaining said damper closed.

5. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operably movable to normally control the air passing through the casing from said inlet to said outlet, means for resisting movement of the damper and means for controllably varying the resistance of said means, said second mentioned means including an element rotatable to engagement with said means provided for resisting movement of said damper.

6. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operably movable to normally control the air passing through the casing from said inlet to said outlet, means for resisting movement of the damper and means for controllably varying the resistance of said means, said second mentioned means including an arcuate element rotatable into engagement with

said means provided for resisting movement of said damper.

7. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operatively movable to normally control the air passing through the casing from said inlet to said outlet, means with which said damper engages, said means providing means for controlling the closing movement of the damper to regulate the normal flow, said damper and means providing means for varying the cooperative position of said means to said damper to thereby provide variable means for resisting movement of said damper, and means for controllably varying the resistance of said first mentioned means.

8. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operatively movable to normally control the air passing through the casing from said inlet to said outlet, means with which said damper engages said means providing means for controlling the damper to regulate the normal flow, said damper and means providing means for varying the cooperative position of said means to said damper to thereby provide variable means for resisting movement of said damper, and means movable into engagement with said first mentioned means providing means for controllably varying the resistance of said first mentioned means.

9. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operatively movable to normally control the air passing through the casing from said inlet to said outlet, means with which said damper engages, said means providing means for controlling the damper to regulate the normal flow, said damper and means providing means for varying the cooperative position of said means to said damper to thereby provide variable means for resisting movement of said damper, and means including an arcuate element rotatable into engagement with said first mentioned means and providing means for controllably varying the resistance of said first mentioned means.

10. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operatively movable to normally control the air passing through the casing from said inlet to said outlet, means with which said damper engages, said means providing means for controlling the damper to regulate the normal flow, said damper and means providing means for varying the cooperative position

of said means to said damper to thereby provide variable means for resisting movement of said damper, and means including an arcuate element rotatable into engagement
5 with said first mentioned means and providing means for controllably varying the resistance of said first mentioned means, and means associated with said rotatable element providing means for maintaining said
10 damper closed.

11. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operably
15 movable to normally control the air passing through the casing from said inlet to said outlet, a flexible element for engaging and resisting closing movement of the damper and means for controllably varying the resistance of said flexible element.
20

12. In a ventilating device of the kind described and in combination, a casing having an inlet and outlet, a damper mounted between said inlet and outlet and operably
25 movable to normally control the air passing through the casing from said inlet to said outlet, means for resisting movement of the damper, means providing means for varying the resistance of said first mentioned
30 means, said second mentioned means including a cam.

In witness whereof, I hereunto subscribe my name this 9th day of Sept. A. D., 1930.

JOSEPH B. CLAY.

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