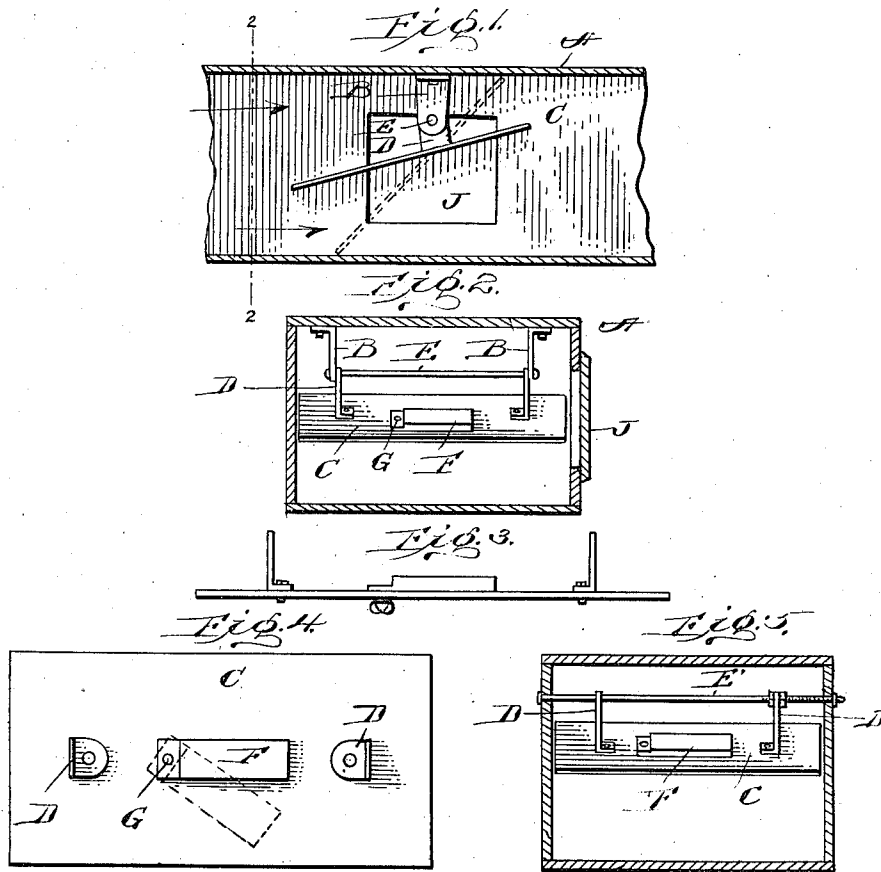


S. P. SMITH.
AIR CURRENT GOVERNOR.
APPLICATION FILED MAR. 12, 1907.

949,009.

Patented Feb. 15, 1910.



Witnesses
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UNITED STATES PATENT OFFICE.

SOLOMON P. SMITH, OF DENVER, COLORADO, ASSIGNOR TO FUEL SAVING COMPANY,
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AIR-CURRENT GOVERNOR.

949,009.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed March 12, 1907. Serial No. 361,933.

To all whom it may concern:

Be it known that I, SOLOMON P. SMITH, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Air-Current Governors, of which the following is a specification.

This invention relates to automatic devices for controlling the flow of air in ducts such as air flues for domestic furnaces, and includes means for varying at will the normal flow by suitable adjustments.

The duct is provided with a pivoted valve plate capable of closing the duct but normally slightly inclined with respect to the duct's direction so as to obstruct a small central portion of the passage, this slight inclination being under normal conditions preferably maintained by gravity. The normal inclination of the valve is adjusted without interfering with the automatic action which depends upon having unequal areas of the valve exposed to the action of the air current upon opposite sides of the pivotal axis.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of a horizontal air duct provided with my device. Fig. 2 is a transverse section on the line 2-2, of Fig. 1, looking to the right. Figs. 3 and 4 are, respectively, an edge and a plan view of the valve plate seen in Figs. 1 and 2. Fig. 5 is a view similar to Fig. 2, showing a slightly modified construction.

In these figures, A represents the walls of a rectangular duct, B fixed hangers depending from the upper wall of the duct, C a valve plate supported by hangers D pivoted at E to the hangers B and themselves fixed to the valve plate in a line parallel to the pivotal axis and unequally distant from the lateral edges of the plate. The construction is such that more than half the plate lies in front of the hangers D, or upon that side from which the air current moves. Normally, the center of gravity of the plate and hangers D lies almost directly below the pivotal axis E, the hangers D counterbalancing the wider exposed portion of the plate which is thus normally slightly inclined. The entire upper surface of the plate is exposed to the pressure of the air current, and if the normal velocity of the current be materially increased, the excess of pres-

sure upon the front portion depresses it, correspondingly increasing the obstruction by the plate while swinging the center of gravity rearward, this action being carried so far, if the current be very strong, as to close the duct, the valve plate being then in the position shown in dotted lines in Fig. 1. The moment the pressure of the air falls sufficiently the weight of the moving parts swings them back to normal position.

The sensitiveness of the apparatus manifestly depends upon the relative distances of the hangers D from the two edges of the valve plate, and these distances may be made such as to secure such sensitiveness as may be desired. When the apparatus is properly proportioned, the valve responds to slight changes in air velocity and practically the same amount of air passes at all times, the area unobstructed by the valve varying inversely with the velocity of the air.

The normal inclination of the valve and the sensitiveness may be adjusted by means of a bar weight F pivoted at one of its ends to the valve plate between the hangers D and held in any desired adjustment by suitable means, a set screw G being shown. The bar F may be so adjusted that it has no effect upon the inclination of the plate, but it is evident that if it be so adjusted as to throw an excess of weight toward either margin the inclination of the plate will be correspondingly lessened or increased, thereby varying the normal opening for the passage of air. Access to the valve may be had through any suitable door J, if desired. Fig. 5 shows the hangers D mounted between collars upon a pivotal transverse rod E' passing horizontally across the duct, the hangers B being omitted. In both forms shown, the plate being pivoted to swing upon an axis at some distance from its plane, pressure upon the narrower part of the plate as well as that upon the wider segment, tends to move the plate about its axis, and the entire force acts with a lever arm. It follows that the device is more sensitive than it would be were the axis in the plane of the plate, in which case the effective force would be only that exerted upon the excess area of the wider segment.

What I claim is:

1. The combination with a duct, of a nor-

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5 mally oblique duct-closing plate pivoted at some distance from its plane upon an axis parallel thereto and unequally distant from its margins and from the corresponding walls of the duct, substantially as set forth.

10 2. The combination with a duct, of a duct closing plate pivoted to swing freely upon an axis parallel to its plane at some distance therefrom, and unequally distant from the opposite margins of the face exposed to impact of the air current, and also from the corresponding sides of the duct, and a weight secured to the plate at an adjustable distance from the axis.

15 3. The combination with a duct-closing

plate having upon one face ears unequally distant from two opposite margins and adapted for suspending the plate to swing upon an axis parallel to said margins and at some distance from the plane of the plate, of a weight secured to the plate and adapted to be adjusted to neutral position in the line of gravity or to either side of such position, substantially as set forth.

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

SOLOMON P. SMITH.

Witnesses:

FRED. O. POTTER,

E. W. BOYD.