No. 765,796. PATENTED JULY 26, 1904.

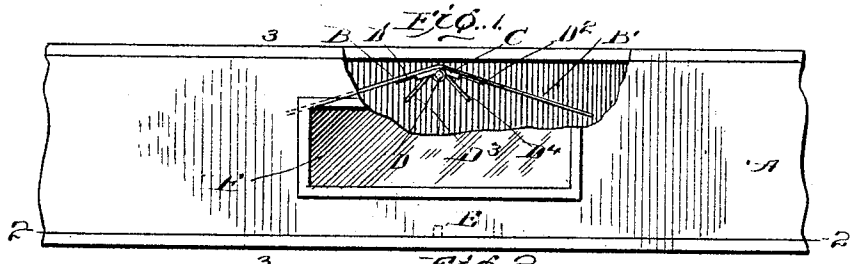
S. P. SMITH.

AIR CURRENT GOVERNOR.

APPLICATION FILED NOV. 3, 1903.

NO MODEL.

Fig. 1.



3

Fig. 2.

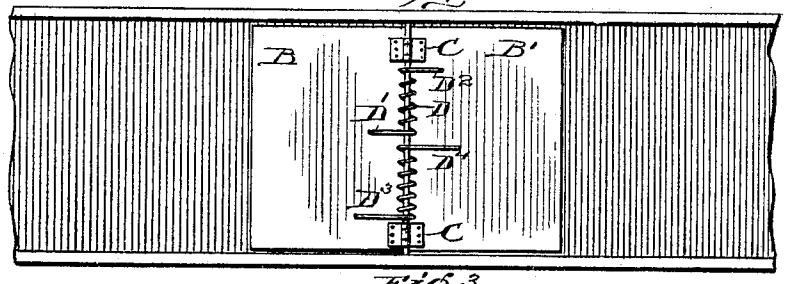


Fig. 3.

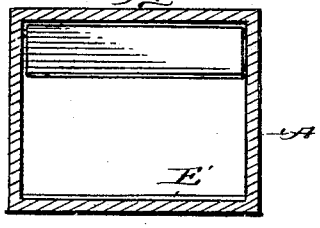


Fig. 4.



Fig. 5.



Witnesses

J. M. Fowler Jr.

S. M. Brown

Inventor

Solomon P. Smith

By

Wallace Greene,

Attorney

No. 765,796. Patented July 26, 1904.

UNITED STATES PATENT OFFICE.

SOLOMON P. SMITH, OF WATERFORD, NEW YORK.

AIR-CURRENT GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 765,796, dated July 26, 1904.

Application filed November 3, 1903. Serial No. 179,737. (No model.)

To all whom it may concern:

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

This invention relates to devices for automatically regulating the passage of air in the ducts of heating and ventilating apparatus and the like, the object being to provide very simple devices that shall be noiseless in operation and that under ordinary conditions will furnish an approximately uniform supply of air whatever the pressure of the air or the velocity with which it arrives at the regulating-point.

In the accompanying drawings, Figure 1 is a side elevation of an air-pipe provided with my devices, parts being broken away. Fig. 2 is a section on the line 2 2, Fig. 1. Fig. 3 is a section on the line 3 3, Fig. 1. Figs. 4 and 5 are similar views of two springs hereinafter mentioned.

In the views, A represents an ordinary air-conduit, such as often supplies cold air to domestic furnaces, and B a plane valve pivoted at one edge upon a rod C and normally inclined downward toward the side from which the air moves. B′ is a similar valve pivoted upon the same axis, but oppositely inclined. Upon the rod C is a loose spring-coil D, having oppositely-inclined arms D' D^2, normally making the same angle with the line of direction of the conduit and supporting, respectively, the two valves, which, with the spring-arms, balance each other and normally occupy the positions shown in full lines in Fig. 1. The rod C also bears a second spring similar to the first, but having its arms D^3 D^4 making a smaller angle with each other and normally lying below and out of contact with the valves. Being thus accurately balanced, the valves rock together or as a whole under a very slight current of air moving in either direction, and thus narrow the passage through which air may pass and which is at the outset made of such size as to permit the desired amount of air to pass without having more than a very moderate rate of flow. The valves, although perfectly balanced, will return to position when the current becomes too slight to overcome appreciable resistance, for the reason that in swinging one valve has its center of gravity moved from the perpendicular let fall from the axis, while the corresponding point of the other valve is moved toward that perpendicular, and the combination is thus thrown slightly out of balance. Should the air-current be still stronger, the swinging carries the one valve against the top of the conduit, where it is arrested; but if the pressure be sufficient the other valve continues to move, overcoming the gradually-increasing resistance of the spring. In thus moving the second valve may swing the spring D^3 D^4 until one of its arms meets the opposite valve, and at this point this spring begins to add its gradually-increasing resistance to that of the other spring. Under ordinary conditions the two springs resist any force that is brought to bear; but in any case neither wing can pass the point at which the air-passage is closed, for at that point it meets a stop E.

In order that it may at all times be known whether the valves are in proper position and that access to them may be convenient, I usually provide a glass door F in the side of the conduit. Through this it may be seen that the valves and the supporting-spring are usually oscillating together slightly under the ordinary slight variations of velocity of the current of air passing in the pipe. Whatever the velocity of the wind the air beyond the valve will move at practically constant speed, for ordinarily the air-pressure on the valves varies only within somewhat narrow limits, and the valves are capable of following the variations very closely, and if violent pressure should close or nearly close the valves it is for an instant only.

What I claim is—

1. The combination with an air-duct and two oppositely-inclined valves mounted therein in position to swing into duct-closing position, of a spring arranged to yieldingly resist such swinging but only after the valves swing through a predetermined angle.

2. The combination with an air-duct and two oppositely-inclined valves mounted there-

in to swing upon the same axis into and out of duct-closing position, of a spring arranged to swing with the valves upon their common axis and to yieldingly resist the angular approach of the valves to each other.

3. The combination with an air-duct, of a normally inclined, duct-closing valve having one of its sides pivoted near the wall of the duct, an oppositely-inclined and balancing valve similarly pivoted upon the same axis, and a spring resisting the approach of the valves to each other while allowing them to rotate upon their common pivotal axis; whereby pressure upon one valve first swings both, and later swings one by compressing the spring.

4. The combination with an air-duct, of two oppositely-inclined duct-closing valves extending downward from a common pivotal axis at the upper side of the duct, a spring resisting lessening of the angle between the valves and swinging freely upon their common axis, and a stop limiting the swinging of the valves, substantially as set forth.

5. The combination with an air-duct and two oppositely-inclined valves extending downward from a common pivotal axis at the upper side of the duct, a spring swinging upon said axis and provided with arms normally holding the valves at a small angle with the upper side of the duct, and a second spring similarly mounted upon said axis and having arms normally making with each other an angle less than that made by the valves with each other.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SOLOMON P. SMITH.

Witnesses:
JOHN B. MCMILLAN,
GEO. E. LATTUE.