(No Model.)

S. P. SMITH.

AIR CURRENT GOVERNOR.

No. 365,945. Patented July 5, 1887.

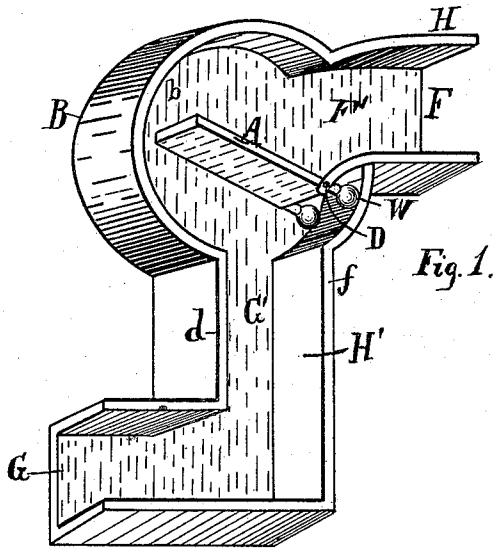


Fig. 1.

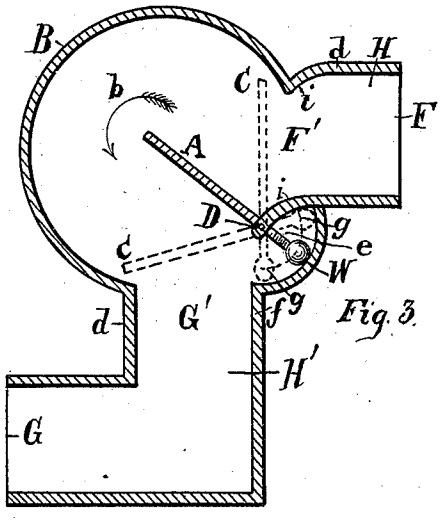


Fig. 3.

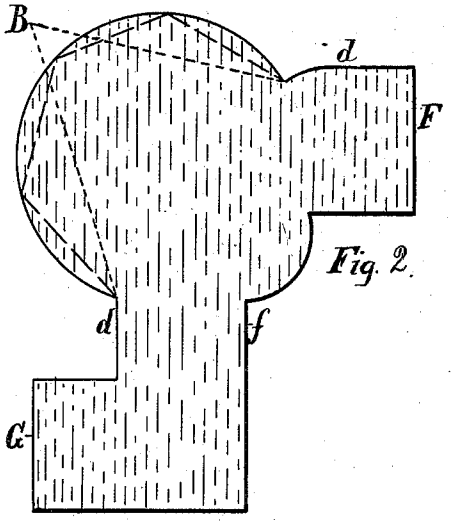


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

SOLOMON P. SMITH, OF WATERFORD, NEW YORK.

AIR-CURRENT GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 365,945, dated July 5, 1887.

Application filed January 25, 1886. Serial No. 189,702. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON P. SMITH, a resident of Waterford, in the county of Saratoga and State of New York, have invented a certain new and useful Improvement in Air-Current Governors; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

My invention is an improvement in air-current governors, and is especially applicable to air-conduits employed to supply fresh or cold air to hot-air furnaces.

The object of my invention is, primarily, to regulate and control the supply of air passing through a conduit under varying pressure, and to cause the degree of pressure to determine the area of the supply-opening, so that a given quantity of air may pass in a given time, whether the degree of pressure varies or remains constant. I have invented several devices for accomplishing this object, which are described in separate applications for Letters Patent of this date.

The device which forms the subject of this application consists of a weight-balanced valve pivoted to swing or oscillate in the angle or bend of an air-conduit, as hereinafter more fully described, and pointed out in the claim.

Figure 1 of the drawings is a view in perspective of the governor with the side casing removed to show the interior. Fig. 2 is a side elevation. Fig. 3 is a vertical longitudinal section.

H is a horizontal conduit having an inlet-opening, F, and connecting with a vertical conduit, H′, having an outlet-opening, G, at its lower end.

A is the valve, pivoted at D, and provided with the arm *e*, provided with a balancing-weight, W. The outer walls, *d*, of the conduits are united by the circular cap B, to form the inner chamber, *b*. The pivot D is located at or near the point where the inner walls, *f*, would intersect if extended. The length of the valve A and depth of the chamber *b* are preferably such that the area of the air-passage around the valve, when the valve is at rest in the position shown in Fig. 3 in the track of the curved arrow, is about the same as that of the conduits. When the valve swings upon its pivot, its oscillating end travels in the curved broken line C C, and the weight in the curved broken line *g* within the chamber *d*. I prefer to drop the horizontal walls *i* of the conduit H a little to give more room for the weight in its upward movement.

The operation of the governor is as follows: A current of air entering the conduit at F passes around the valve in the direction of the arrow, down the vertical conduit, and out opening G to the furnace. Should the current be of considerable force, it will depress the valve toward the vertical conduit and diminish the area of the passage between the valve and the upper edge of the vertical conduit. Should the current be extremely violent, as frequently happens in a windy day, the valve would be depressed to the position shown by the dotted lines, entirely closing the passage G′, leading into the vertical conduit, and stopping the air-current, whereupon the air-pressure is so reduced that the weight immediately acts to open the valve again and permit a renewal of the air-current, thereby maintaining a flow of air nearly constant in volume, the area of the air-passage being contracted in proportion to the velocity of the current. Should there be a back draft or pressure, the direction of the current would be reversed, and the valve would be driven against the inner end, F′, of conduit H to close the passage-way therein, as shown by the dotted lines. I am thus able to produce a double-acting valve that will govern both direct and reverse air-currents. This device is particularly useful when it is desired to locate the furnace contiguous to an outer wall of a building through which the cold or fresh air is to be introduced. In such a case it frequently happens that the horizontal conduits are not of sufficient length to receive a governor having a pivoted valve depending from the upper horizontal wall of the conduit. By locating the valve at the angle or bend formed at the junction of a horizontal and vertical conduit I can easily introduce a double-acting valve that will act to close or regulate the size of the air-passage,

whether acted upon by a direct or reverse current. It is not necessary that the conduits should be exactly horizontal and vertical; but they are preferably made approximately so.

The valve-chamber *b* need not be limited to a circular form, but may be angular, as shown by dotted lines in Fig. 3.

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

The combination of the air-conduit H, having the downwardly-curved lip *i*, the curved chamber B *b*, the valve A, hinged at D, the balance-arm *e*, weighted at W, and the conduit H′, all arranged as shown and described.

In testimony whereof I have hereunto set my hand this 18th day of January, 1886.

SOLOMON P. SMITH.

Witnesses:

GEO. A. MOSHER,

CHAS. L. ALDEN.