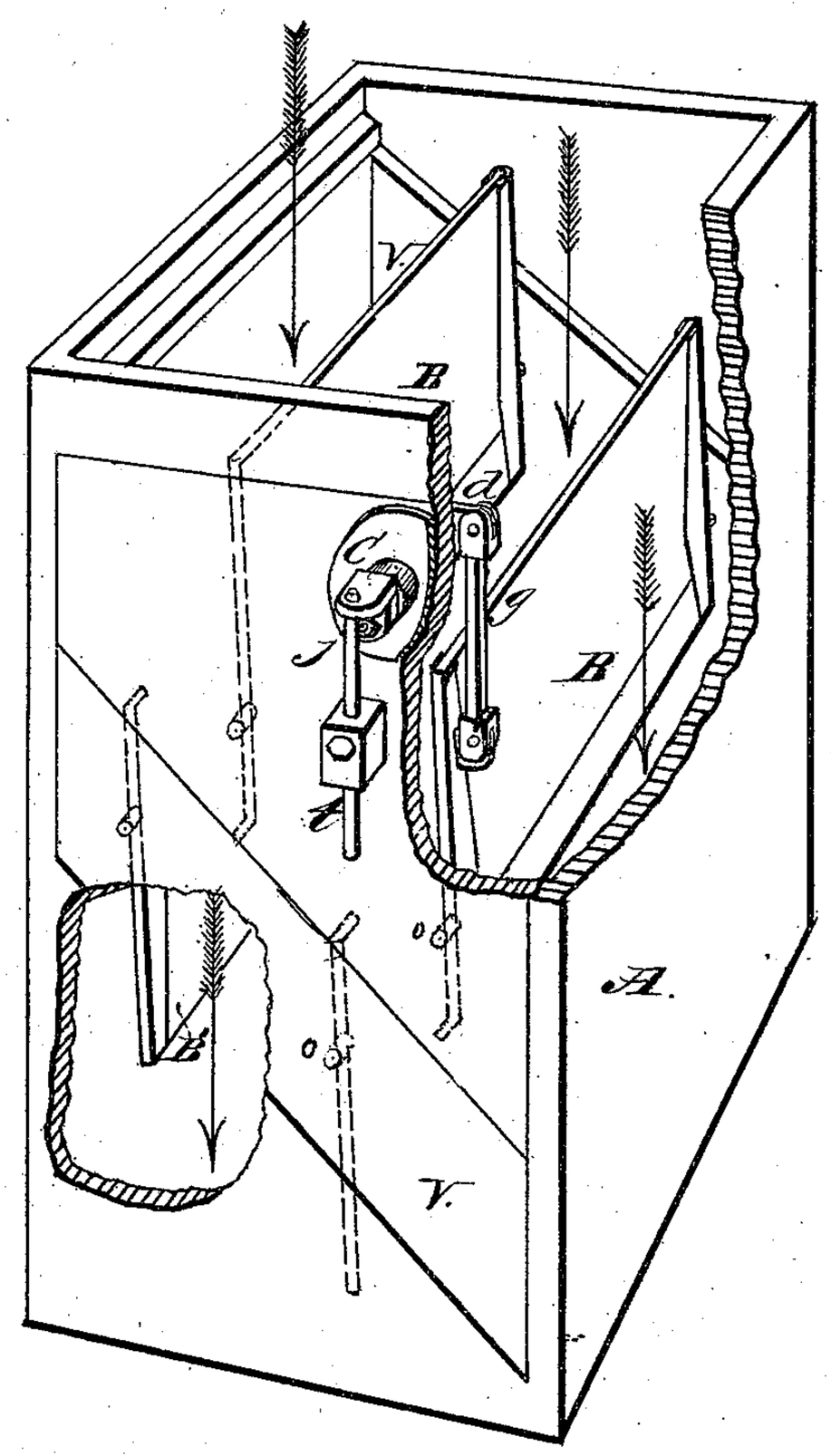
3 Sheets—Sheet 1.

A. H. TINGLEY.

REGULATORS FOR AIR-PASSAGES.

No. 173,518. Patented Feb. 15, 1876.

Fig. 1.



Witnesses:

Frank H. Arnold.

Benjamin Arnold

Inventor:

Albert H. Tingley

3 Sheets—Sheet 2.

A. H. TINGLEY.

REGULATORS FOR AIR-PASSAGES.

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Fig. 4.

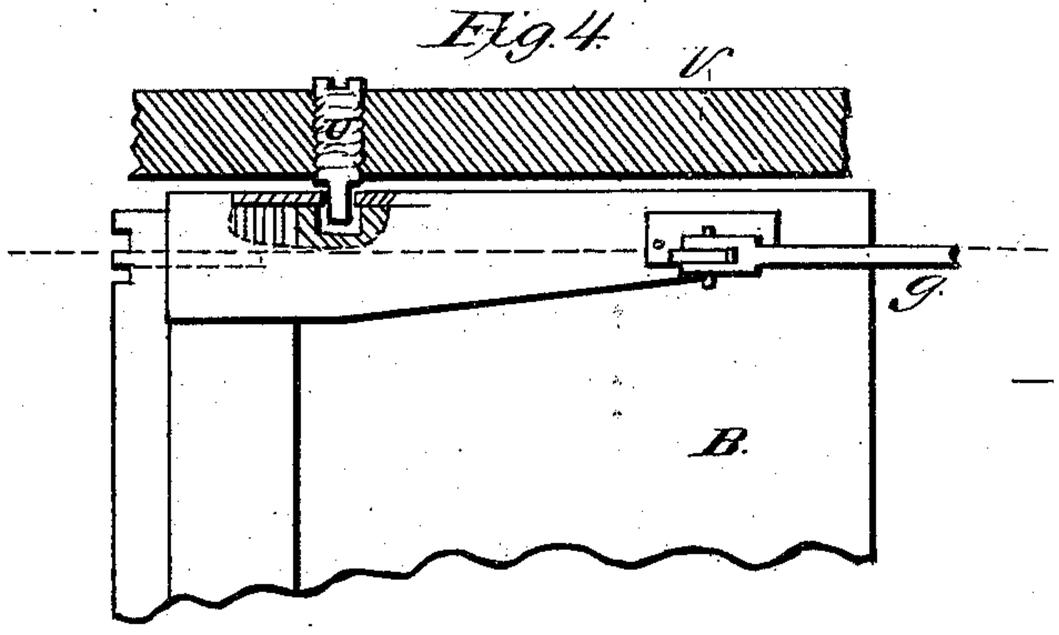


Fig. 2.

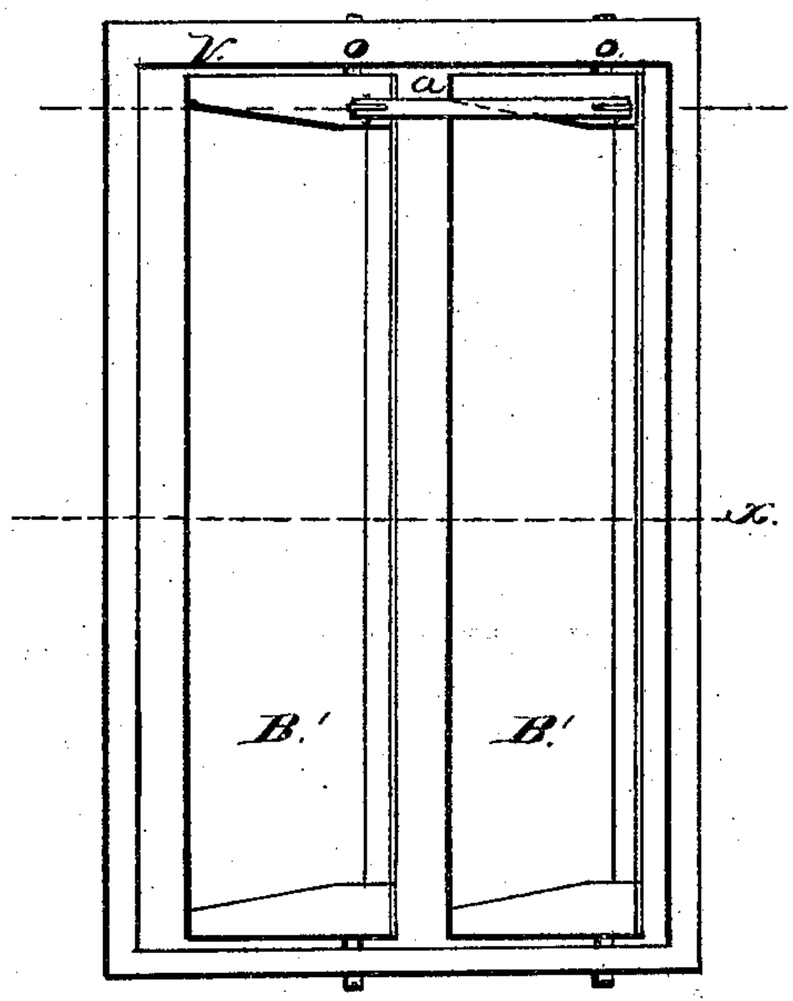


Fig. 5.

Fig. 6.

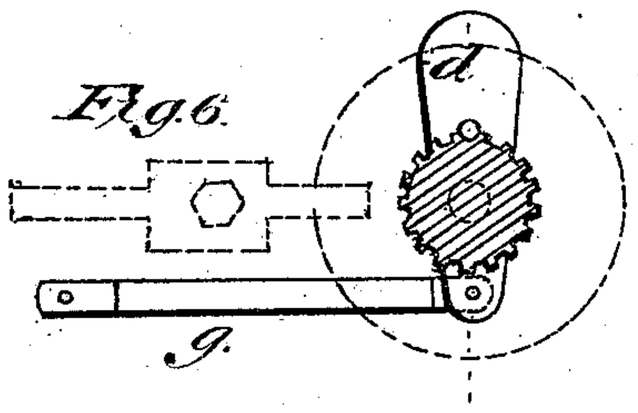


Fig. 3.

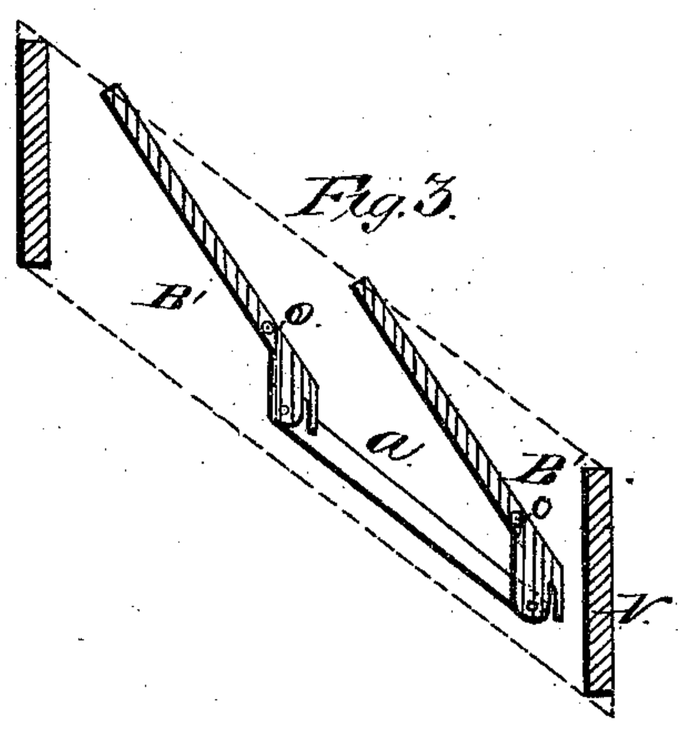
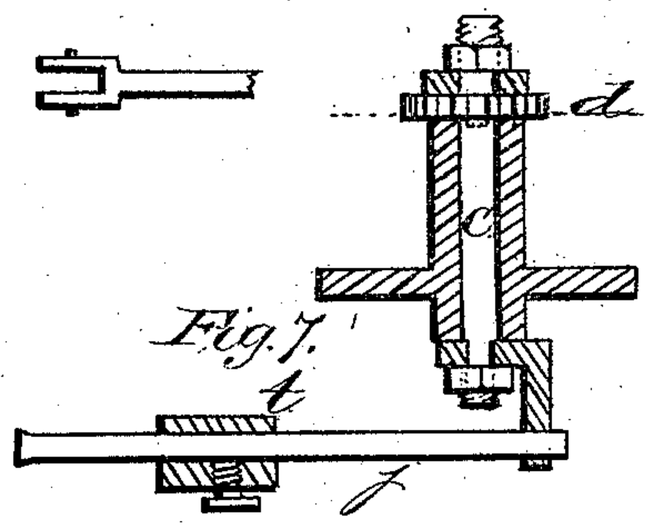


Fig. 7.



Witnesses:

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3 Sheets—Sheet 3.

A. H. TINGLEY.

REGULATORS FOR AIR-PASSAGES.

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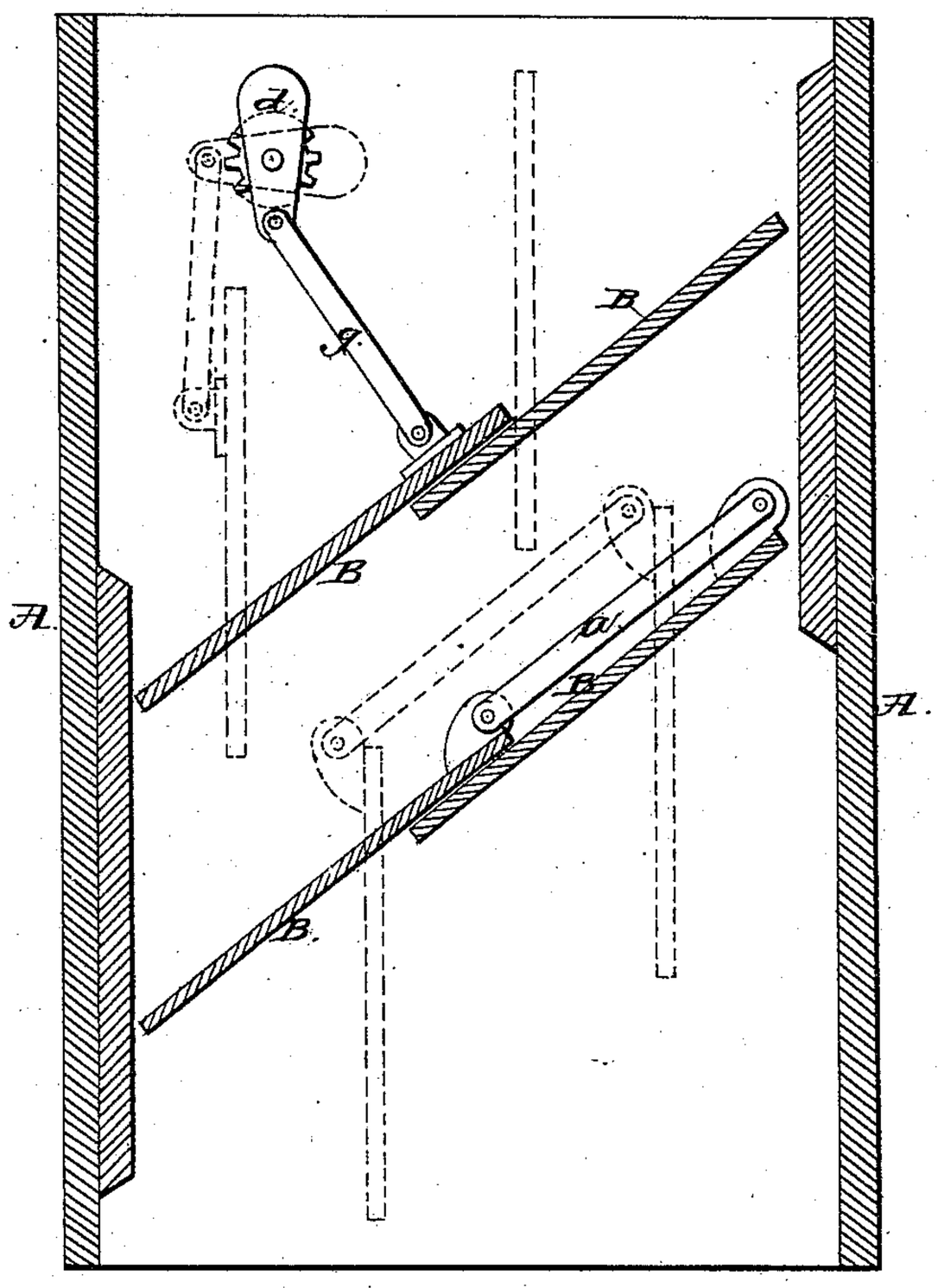
Fig. 8.



Witnesses:
Frank H. Arnold.

Benjamin Arnold.

Inventor:
Albert H. Tingley.

UNITED STATES PATENT OFFICE.

ALBERT H. TINGLEY, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN REGULATORS FOR AIR-PASSAGES.

Specification forming part of Letters Patent No. **173,518**, dated February 15, 1876; application filed February 3, 1875.

To all whom it may concern:

Be it known that I, ALBERT H. TINGLEY, of the city and county of Providence and State of Rhode Island, have invented certain Improvements in Regulators for Air-Passages, of which the following is a specification:

The object of my invention is to prevent the wind from disturbing the supply of air to the chambers of hot-air furnaces, and also to regulate the draft of ventilators; and consists in putting in the air-passage one or more wings balanced on pivots, and connected to an arm provided with a sliding weight, for the purpose of regulating the position and action of the wings; also, in putting one or more wings in a reversed position below or back of the others, and not connected to any weighted arm, but so arranged as to be instantly closed by any outward current of air in the passage.

In the drawings, Figure 1 shows a case or air-box with the frames in which the wings are hung. The frames are intended to be put just inside the entrance of the air box or passage, and may be set in a vertical or horizontal position, as the case may require; but if the wings are placed in a vertical position they can be used without balancing. Fig. 1 shows a part of the case A removed, so that the position of the wings may be seen. Fig. 2 is a top view of the second set of wings. Fig. 3 is a cross-section of the same, taken on line *x*, Fig. 2. Fig. 4 is an enlarged view of the top of one end of a wing, showing a section of the pivot. Fig. 5 is an end view of the same. Fig. 6 shows the adjustable arm and connection. Fig. 7 is a view, in section, of shaft *c*, and its arm, with sliding weight *t*. Fig. 8 is a central section.

A is the case or air-box. B are wings, made of wood preferably, and bound around their edges with metal to prevent them from warping. The pivots *o* of the wings are put near one edge, so that a current of air will move them, and the narrow sides of the wings are weighted, so that they will balance on the pivots. A rod, *a*, is pivoted, one end to each wing, to connect them together. A short rocker-shaft, *c*, is put in a bearing in one side of the case, and on the outer end of the shaft an arm, *j*, is fastened with a weight, *t*, in which is a set-screw to fasten it at any place on the arm to regulate the effect of the weight.

The inner end of the shaft has an arm, *d*, which is made adjustable on the shaft, that the wings may be set more or less open when the weight is hanging down. A rod, *g*, connects the arm *d* to one of the wings. The upper set of wings only are connected to the shaft and weighted arm. The lower set are placed with the broad part of the wings hanging down, so as to be operated by an outward current of air, as it is often necessary to put air-boxes on two opposite sides of a building to supply the heater, and when the wind blows past the house the tendency to form a vacuum on the lee-side draws the air out of the passage on that side; then the second set of wings will close and stop the outward current of air. The wings of both sets are constructed alike, the narrow edges of them being curved, so as to offer a surface for the air to strike against and turn the wings when their broad parts are standing parallel to the direction of the current, and would not otherwise be turned either way by it.

The operation of the upper set is to prevent the wind from increasing the current of air that enters the air-box by partially closing when the wind blows against them, and thus regulating the size of the openings to the amount of pressure outside, so as to furnish a uniform supply of air to the heating-chamber of the furnace.

For the sake of convenience in constructing them the wings are put in frames V, that slide into the side of the case, in which shape they are to be made of two or more sizes for sale as an article of manufacture.

Having thus described my improvements, what I claim as my invention is—

1. The combination of the balanced wings B B with the arm *d*, shaft *c*, and arm *j*, with its weight *t* and case A, substantially as and for the purpose set forth.

2. The wings B′ B′, constructed and operating substantially as described, in combination with the frame and case A, for the purpose herein set forth.

3. The combination of the frames V V, wings B B′, constructed and operating, substantially as described, with the case A, for the purpose specified.

ALBERT H. TINGLEY.

Witnesses:

LORIN M. COOLE,

JOHN W. PARKHURST.