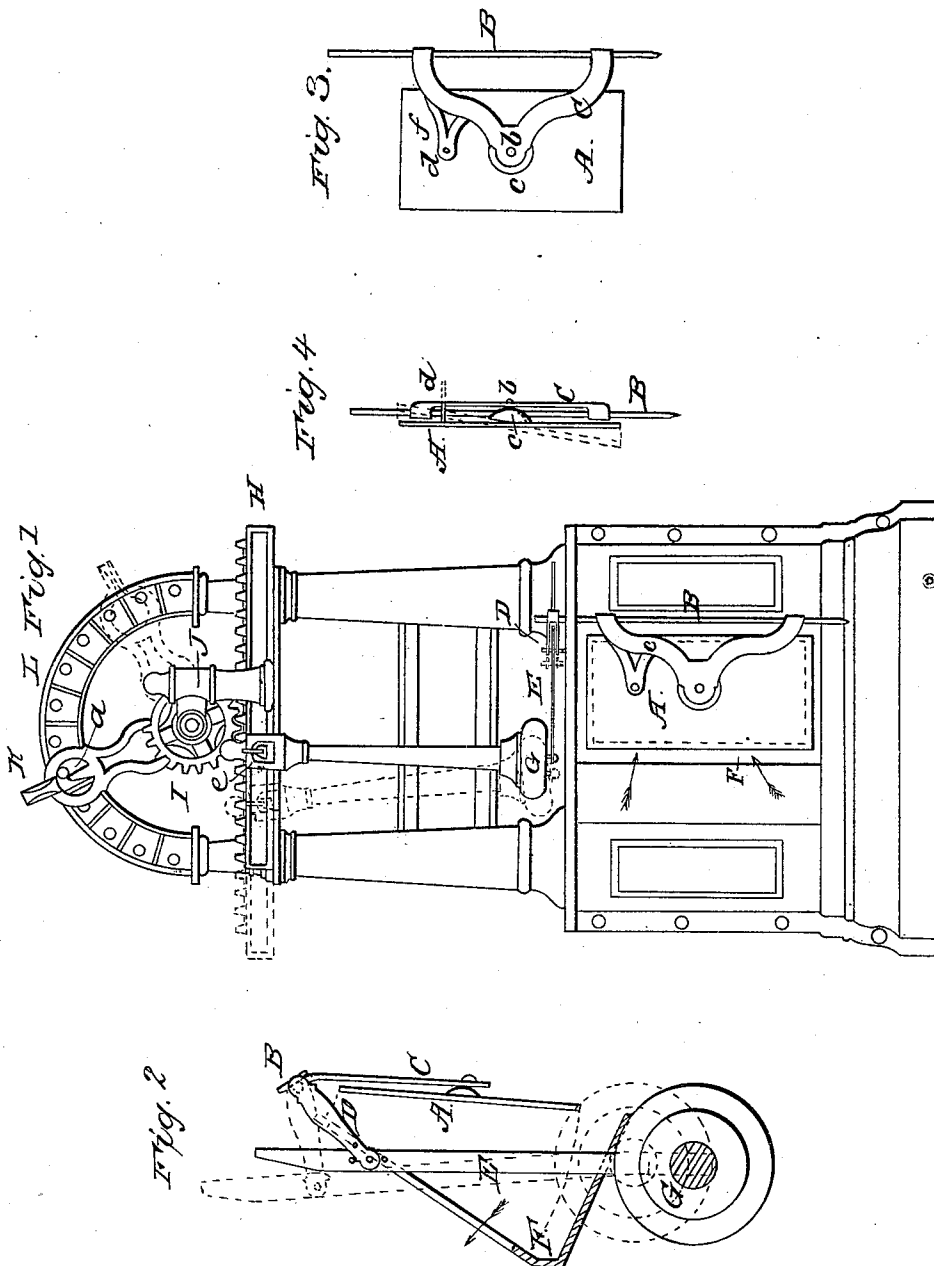


B. HOLLY.

Damper.

No. 20,919.

Patented July 13, 1858.



UNITED STATES PATENT OFFICE.

B. HOLLY, OF SENECA FALLS, NEW YORK, ASSIGNOR TO HIMSELF AND JOHN S. EDWARDS,
OF SAME PLACE.

ATMOSPHERIC REGULATOR FOR STOVES, FURNACES, &c.

Specification of Letters Patent No. 20,919, dated July 13, 1858.

To all whom it may concern:

Be it known that I, BIRDSILL HOLLY, of Seneca Falls, in the county of Seneca and State of New York, have invented a new and Improved Atmospheric Regulator for Stoves, Furnaces, &c.; and I do hereby declare that the following is a full and exact description of the construction and operation thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon.

Like letters designate corresponding parts in all the figures.

Figure 1, is a front elevation of my invention exhibiting its general form and construction. It is designed to attach to the front of stoves and furnaces for the purpose of regulating the quantity of air admitted to support combustion.

A is the damper, or valve-plate, covering the draft-aperture which is indicated by dotted lines. It is hung upon the spindle, B, by the frame C, which is immovably attached to the spindle, causing it to revolve with the opening and closing of the damper. An elbow lever D, is also rigidly attached to the top of the spindle and connected, by the rod E, with the pendulum G.

Fig. 2, is a plan view of this arrangement showing also the damper seat F, with draft orifice and damper open. The pendulum is suspended from a center *e* on the movable bar H, which is provided with a rack upon its upper side with which the pinion I, gears, it having a bearing on an arm of the stud, J, which is fixed upon the frame. Attached to the pinion is an index lever, K, by moving which around the arc, L, the bar H is made to slide back and forth, thus moving the center or axis of the pendulum G, horizontally as indicated by the dotted lines in the drawing. Any other method of sliding the bar H, and thereby changing the position of the pendulum axis may be employed, but I prefer to use the rack and pinion as being most simple and convenient.

It will be seen that, by opening and closing the damper, the pendulum is made to vibrate through the means of the elbow lever on the spindle, B, and the leverage being compounded by the frame C, a very slight power applied to the damper will affect the

pendulum, thus rendering the damper sensitive to the slightest impulse. The pendulum is the governing influence. If moved in one direction it seeks a return to the center of gravitation and thereby closes the damper,—if in the other, its force is exerted to open it. Its practical operation as applied to this purpose is as follows:—Upon building a fire the lever, K, is turned sufficiently to cause the weight of the pendulum to open the damper and admit of a strong draft. As combustion progresses, the increased rarefaction of the air within the stove causes an increased pressure from the external atmosphere on the damper, partially or wholly closing it in proportion to the force. As the heat abates the external pressure diminishes, and the damper gradually opens. If desired to stop the draft entirely the pendulum is moved so far that its weight preponderates to keep the damper closed; if to prevent its closing the opposite movement of the pendulum effects that result. But the chief object is to render the damper so susceptible to atmospheric pressure as to open or close with every variation of the draft, and thereby equalize the combustion of fuel and regulate the temperature. The index *a* on lever K, marks the movement of the lever by the divisions of the arc, and experiment soon enables one to determine the required movement of the lever to insure a certain temperature. The damper is so arranged on the frame C, as to adjust itself accurately to the seat, even though considerable variation from its plane be required. It is pivoted to the frame at *b* Fig. 3, upon a convex projection *c* which allows it free motion that shall vary it considerably from its ordinary plane. A second pivot *d* is loose, and slides through the arm *f* preventing it from turning vertically on the pivot *b*, but giving it the free lateral movements allowed by the convex bearing *c*, as shown in Fig. 4. As it closes the pressure of the external air causes it to fit equally close on all parts of the seat to the exclusion of all the draft.

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

1. The employment of a pendulum or balance having a movable axis, connected with the valve or damper A by the levers C and D, or their equivalents, in such a manner

that the gravitating force shall increase as the damper closes and diminish as it opens, for the purpose of regulating the admission of air to the fuel, substantially in the manner set forth.

5 2. I also claim the method of hanging the damper A by means of the convex pivot

bearing *c* arm *f*, and sliding pivot *d*, substantially as and for the purpose described.

BIRDSILL HOLLY.

Witnesses:

J. FRASER,
S. J. ALLIS.