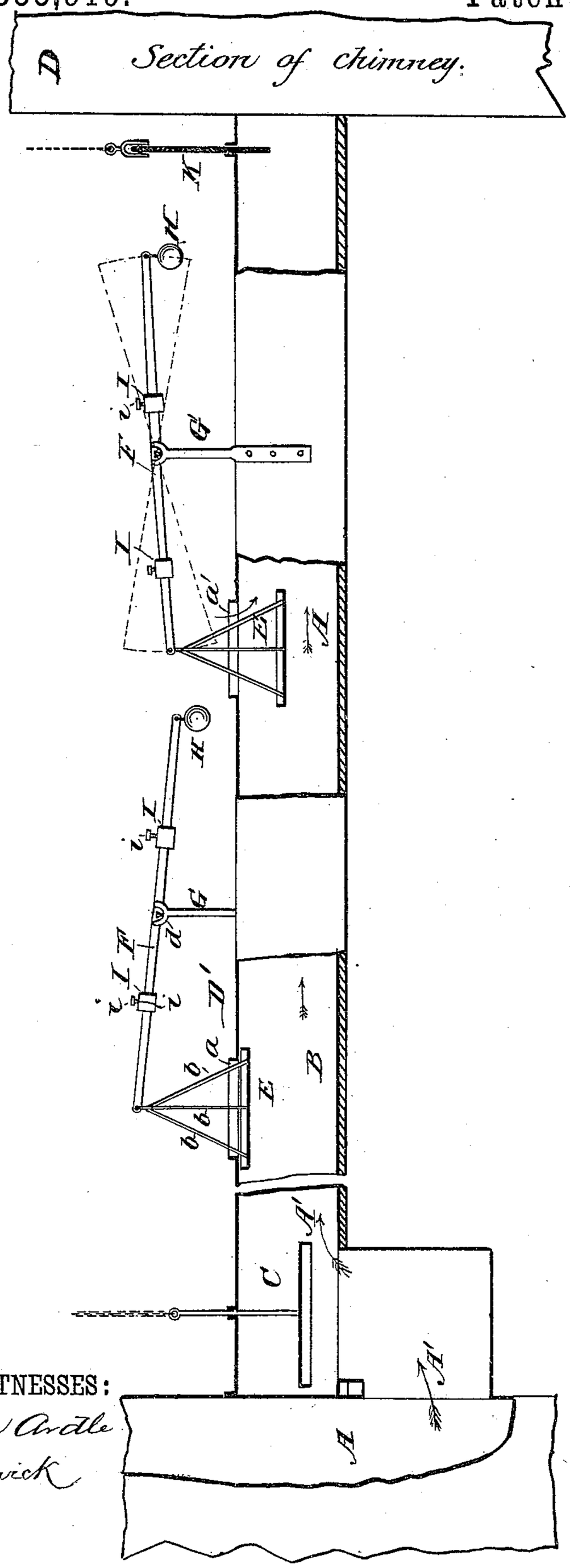
(No Model.)

J. CANT.

REGULATOR FOR FLUES.

No. 355,919. Patented Jan. 11, 1887.



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REGULATOR FOR FLUES.

SPECIFICATION forming part of Letters Patent No. 355,919, dated January 11, 1887.

Application filed April 29, 1886. Serial No. 200,578. (No model.)

To all whom it may concern:

Be it known that I, JAMES CANT, of Ore Bridge, Thornton, Fifeshire, Scotland, have invented a new and Improved Regulator for Flues, of which the following is a full, clear, and exact description.

The object of my invention is to provide for the more perfect regulation of the ventilating of sulphuric-acid chambers or other chambers and furnaces, fires, and close places, or of flues and ducts leading from such places as have been named.

To the end named my invention consists in the construction and arrangement of parts, as will be hereinafter more fully explained, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure is a side view of a sulphuric-acid chamber and its flue, certain portions of the flue being broken away to disclose the construction of the parts.

Referring now to the general construction illustrated in the drawing above referred to, A represents a sulphuric-acid chamber, in connection with which there is arranged a ventilating-flue, B, provided with a valve or trap, C, arranged to close the way from the chamber to the flue, such valve being arranged in the ordinary well-known manner. The chamber and flue leading to the chimney D are, as usual, lined with sheet-lead.

In the top of the flue B there are one or more openings, *a a'*, closed by valve-plates E, that are suspended by lead or lead-covered rods *b b* from one end of a beam-lever, F, said lever being provided with a knife-edge, *c*, which passes through the beam and rests upon the supporting-arms *d d* of a standard, G, the valve being counterbalanced by a weight, H, suspended from the opposite end of the beam F. In order, however, that a very delicate adjustment of the valve may be obtained, I mount small sliding weights I I upon the beam F, one of such weights being arranged upon either side of the standard, the said sliding weights being held in place by set-screws *i i*, or any other appropriate means.

In operation the weights I are adjusted so that when the desired amount of draft in the flue B is exceeded the suction produced thereby will draw down the valve, so that a certain amount of air will be admitted within the flue, thus checking the draft or suction, and consequently the speed or velocity with which the gases are passing through the flue, and as the velocity of the gases is checked the suction to which the valve is subjected is also decreased, and the valve will be returned to its seat, closing the opening *a*. In this way a constant and practically uniform draft is maintained within the flue and the ventilation of the chamber A regulated with the greatest nicety.

To more perfectly regulate the ventilation, I sometimes employ two or more valves, as illustrated in the drawing, and in this arrangement it will be understood that the valve nearest the chimney D would be the first one to be drawn down, and being somewhat removed from the acid-chamber, it will be understood that the regulation of the ventilation of such chamber would be more perfect. The arrangement of the valve-regulator could be considerably varied to meet the requirements of the various styles of chamber to which it was to be applied, it being of course understood that if a simple hot-air flue were to be ventilated the parts would be made of iron, and it being also understood that the valve might be counterbalanced by a weight supported by a cord that was secured to the valve and passed over a pulley.

In cases where the escaping or exhausting flues to the chimney are larger than are actually required, as is frequently the case, and where other flues lead into the same chimney, an ordinary balance-weighted slide-plate damper would be fitted, as shown at K, between the regulating-valves and the chimney, to be set by hand to appropriately reduce the size of the flue and consequent amount of cold air required to pass in through the valves, and thus prevent injury to the draft of the chimney-shaft, which, without this valve, might injuriously affect the draft in other flues leading into the chimney-shaft.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a chamber and the chimney, of a flue, B, connecting the same, and having an opening, *a*, in its upper side communicating with the outer air, and a counter-

balanced valve-plate within the flue, closing the said opening from the inside and opening inward by the draft in the said flue, substantially as set forth.

2. The combination, with a chamber, a chimney, and a flue connecting them, and having an opening, *a*, in the top surface communicating with the outer air, of a pivoted counterbalanced lever on the top surface of the flue, at one side of the said opening, a depending rod on one end of the lever extending into opening *a*, and the valve-plate on the lower end of said rod, within the flue, and of greater diameter than said opening, whereby an increase of draft above a predetermined point through the flue will cause the valve-plate to be drawn inward to admit air and check the draft, substantially as described.

3. The combination, with the chamber A, the chimney, and the flue B, having the opening *a* in its top communicating with the outer air, of the standard G, the lever F, pivoted to the upper end thereof at *d*, the rods *b* at one end of the lever, the valve E on the lower ends of the rods, within the flue, and closing said opening from the inside, the weight H at the opposite end of the lever, and the adjustable weights I at opposite sides of the pivotal point of the lever, substantially as set forth.

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