March 28, 1939. J. L. BREESE 2,152,301

DRAFT REGULATOR

Filed Feb. 19, 1937

Fig. 1.

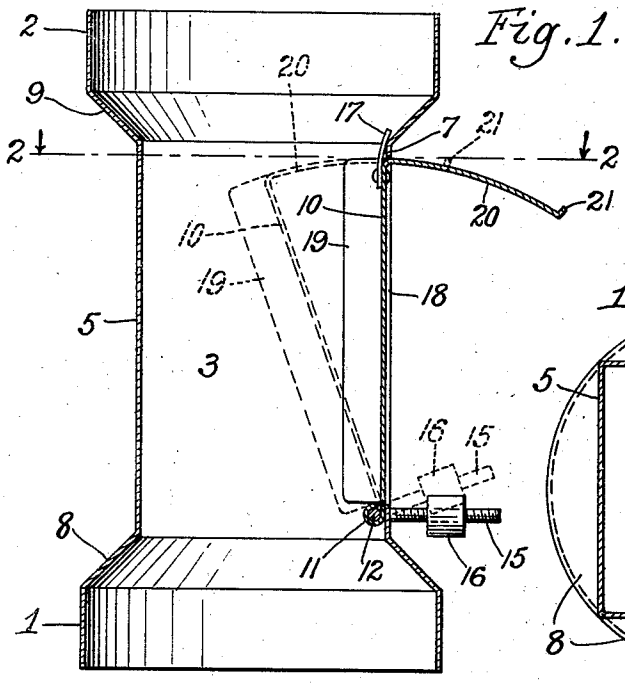


Fig. 2.

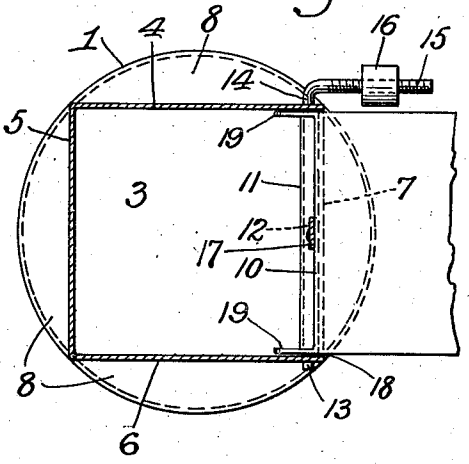


Fig. 3.

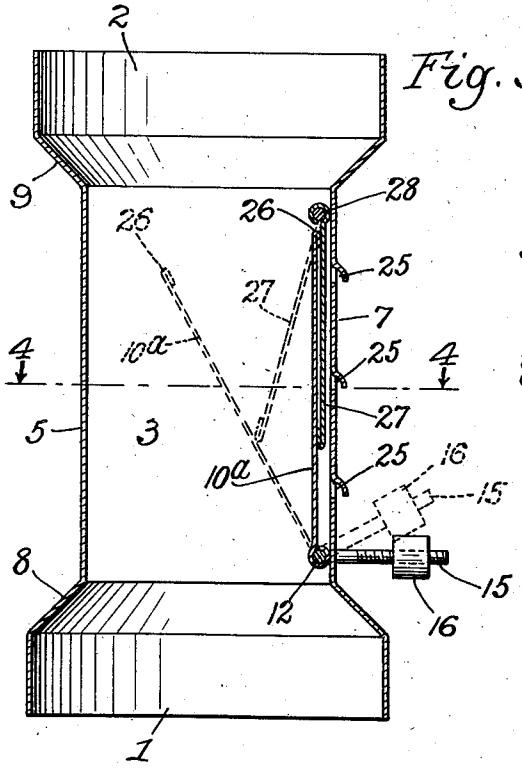
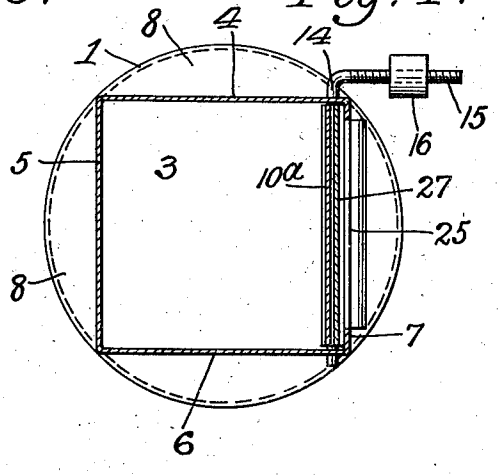


Fig. 4.



Inventor

James L. Breese

by Parker & Carter

Attorneys.

Patented Mar. 28, 1939 2,152,301

UNITED STATES PATENT OFFICE

2,152,301

DRAFT REGULATOR

James L. Breese, Santa Fe, N. Mex., assignor to Oil Devices, Santa Fe, N. Mex., a limited partnership of Illinois

Application February 19, 1937, Serial No. 126,572

2 Claims. (Cl. 236—45)

My invention relates to an improvement in self-regulating valves or draft controls applicable, for example, to use with oil burners.

One purpose is the provision of a draft control or self-regulating valve, the action of which is entirely automatic without the necessity of any manual manipulation in normal circumstances.

Another purpose is the provision of such a control which operates independently of the admission of any outside air into the draft line or flue.

Another purpose is the provision of means for preventing any substantial air leakage into the flue during the operation of the control.

Other purposes will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawing, wherein:

Figure 1 is a vertical section;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a vertical section in a variant form; and

Figure 4 is a section on the line 4—4 of Figure 3.

Like parts are indicated by like symbols throughout the specification and drawing.

Referring to the drawing, 1 represents a flue pipe which may extend from any suitable burner, stove, or the like, and is herein shown as generally cylindrical. 2 is a similar member which may extend to any suitable outlet, chimney, or the like. Between the two, I illustrate a box of rectangular cross section which is generally indicated as 3, and includes the walls 4, 5, 6 and 7, which may be connected to the members 1 and 2 and by the inclined portions 8 and 9. Positioned within the housing 3 I illustrate a valve member which includes a plane sheet of metal or the like 10, herein shown as curled at one edge as at 11 about the pin 12, one end of which 13 passes through an aperture in the wall 6, the opposite end 14 of which passes through an aperture in the opposite wall 4. The member 14 has an angular lever extension 15 shown as screw-threaded and provided with the manually adjustable weight 16. It will be understood that the weight 16 normally holds the portion 10 in the full line position of Figure 1 against the inside of the wall 7. If desired, a stop 17 may be employed to limit the movement of the member 10 in the direction of the wall 7. The wall 7 is shown as cut away to provide an aperture 18, but the wall may be closed and provided with louvres or apertures to correspond with the form shown in Figure 3, the important factor being that one face of the member 10 should be subjected to the effect of atmospheric air pressure, while the other face should be subjected to pressures existing within the flue and the member 3. Any suitable means for preventing any substantial air leakage may be employed. I illustrate, for example, side flanges 19 along the opposite edges of the member 10 and an arcuate top flange 20, which may, if desired, have a terminal stop flange 21 to limit movement of the valve or member 10 into the housing 3.

Referring to the form of Figure 3, the wall 7, instead of being cut away to form the aperture 18, is provided with louvres 25 or any suitable air aperture or apertures might be substituted therefor. The member 10a of Figure 3 is shown as terminating in an upper edge 26 from which the arcuate flange 20 is omitted. In place of it, I may employ a second hinged member or flap 27 pivoted as at 28 to the walls 4 and 6. The members 10a and 27 are so proportioned that the lower edge or free edge of the flap 27 always abuts against the face of the flap 10a and serves as an air seal for preventing any substantial air leakage of atmospheric air into the housing 3 and thus into the flue.

It will be realized that whereas I have described and shown a practical and operative device, nevertheless many changes in size, shape, number and disposition of parts may be made without departing from the spirit of my invention. I therefore wish my drawing to be taken as in a broad sense illustrative and diagrammatic rather than as limiting me to the specific forms herein shown.

The use and operation of my invention are as follows:

The members 10 and 10a which serve as limiting valves are entirely closed within the flue space or housing 3. They respond to changes in pressure and atmospheric air, either through the aperture 18 or the louvre apertures 25, penetrating to the space defined by the outer face of members 10 and 10a. However, the atmospheric air pressure is therefore able to overbalance the influence of the weights 8 and move the members 10 or 10a into the dotted line position of Figures 1 and 2, while still not flowing in any substantial volume into the stream of gases flowing through the flue. In effect, the member 10 or 10a constitutes a tight gate which closes an open side or window in the rectangular box, with the weight 8 tending normally to move the gate into the full line position of Figure 1 or 3, thus keeping the passage through the box or housing 3 fully open. In use, the member 10 or 10a moves in response only to low pressure below the valve, not to suction above the valve. Assuming

that the pressure drops below the valve or gate 10, 10a, then the atmospheric air thrusts the valve in and lifts the weight 8 against gravity. To give a tangible example, assume that a draft .05 inch opens the valve half way. If the valve stays in that position, the draft below the valve would then be .05 inch. If, however, the draft in the chimney above the valve 10 or 10a is increased to .08 inch, then the draft below the valve, before it starts to move, will become .08 inch, which in turn will change the position of the valve to such an extent that the draft below the valve would become .05 inch. In other words, an increase in draft above the valve affects the pressure in the passage below the valve and pulls the valve into further closing position with negligible leakage of air from the room into the flue. Broadly, what is involved is a pressure reducing valve with atmospheric pressure forming the function of loading the valve.

I claim:

1. In a control damper for flues, a flue passage member including a portion of generally rectangular cross section, a pressure responsive valve member pivoted in said rectangular portion in substantially air tight relation with the walls thereof, a pivot member for said valve extending through two opposite walls of said rectangular portion adjacent a third wall, said third wall having an opening therein, and weight means associated with the pivot member and adapted normally to hold said valve member withdrawn against said third wall of said rectangular portion to close said opening, one face of said valve member being subjected to pressures existent within the flue, the other being subjected to outside atmospheric pressure, and movable sealing means associated with said valve member, including a pressure responsive flap mounted for rotation about an axis parallel with the axis of rotation of said valve member, the free outer edge of said flap being normally at all times engaged by the outer face of said valve member.

2. In a control damper for flues, a generally vertical passage member having a plurality of opposed parallel plane walls, a plurality of pressure responsive valve members mounted in said passage members for rotation about generally parallel horizontal axes, said axes being mounted in said parallel walls adjacent a third wall of said passage member, said third wall having an opening therein, whereby the exteriors of said valve members are exposed to the atmosphere, said valve members being at all times in constant substantially air tight relation with each other and with said parallel walls, the interior faces of said valve members being at all times subjected only to pressure existent within said passage member, the upper of said valve members having a lower edge abutting at all times against the outer face of the lower valve member in response to atmospheric pressure thereagainst.

JAMES L. BREESE.