F. D. LEIGHTON & F. H. DRAKE.

DAMPER.

APPLICATION FILED JUNE 24, 1914.

1,142,894. Patented June 15, 1915.

Fig. 1.

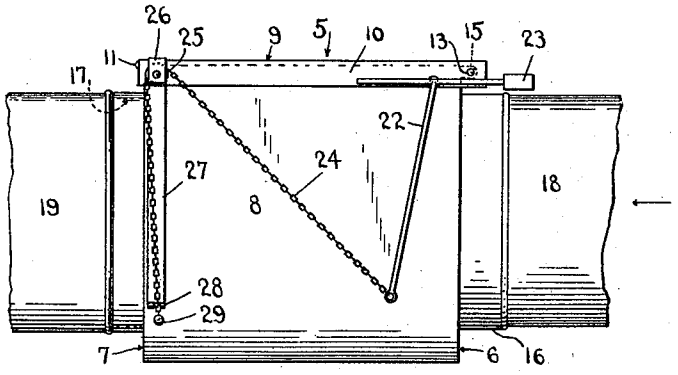


Fig. 2.

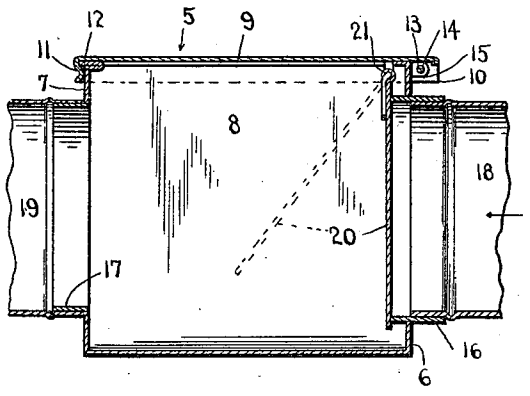
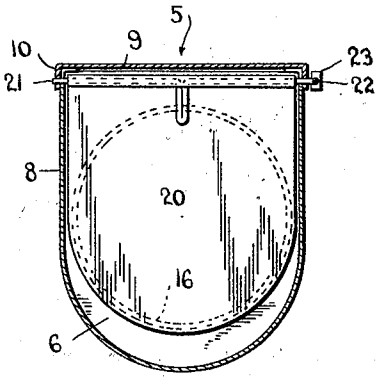


Fig. 3.



Witnesses

L. B. James

P. H. Pattison.

Inventors

Frank O. Leighton

Frank H. Drake

By Richard Cecil Hunick

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

FRANK D. LEIGHTON AND FRANK H. DRAKE, OF MANCHESTER, NEW HAMPSHIRE.

DAMPER.

1,142,894. Specification of Letters Patent. Patented June 15, 1915.

Application filed June 24, 1914. Serial No. 846,952.

To all whom it may concern:

Be it known that we, FRANK D. LEIGHTON and FRANK H. DRAKE, both citizens of the United States, and both residing at Manchester, in the county of Hillsboro and State of New Hampshire, have invented certain new and useful Improvements in Dampers, of which the following is a specification.

This invention has reference to dampers for stoves and furnaces, and it proposes, briefly, an improved device of the character or class indicated which is mounted in such a way in the smoke flue as to normally close the same, but automatically open chimneyward upon the use of gas pressure in the fire-box. In the former position, the retention of the heated gases in the fire-box, until consumed, is insured, while the automatic opening serves to prevent both escape of gas into the cellar or other room where the heating plant is installed, and entrance of cold air into the flue.

The invention also resides in the provision of a damper box which is equipped with a device for regulating the extent of movement of the damper and which further, is so constructed as to enable it to be readily opened and cleaned.

An embodiment of the invention is illustrated in the accompanying drawing, whereof:—

Figure 1 is a side-elevation of the improved damper and damper-box; and Figs. 2 and 3 are central, transverse and longitudinal vertical sections respectively.

As shown in said drawing, the damper-box, which is indicated generally by the numeral 5, is approximately trough-shaped in cross-section, and comprises end walls 6 and 7 and a side wall 8, the lower portion of the latter wall being rounded. The top of this box is closed by a swinging cover or lid 9 provided along its side edges with depending flanges 10, and along one end with a spring tongue 11 that coacts with a rib or projection 12 on the adjacent box wall 7 to hold the cover in closed projection. The rear ends of the flanges 10 are connected by a horizontal rod 13 which passes loosely through perforations or bearing openings 14 formed in a pair of brackets 15 fastened to the box wall 6, the rod thus constituting the axis about which the cover swings.

The two walls 6 and 7 are formed with annular flanges or necks 16 and 17 to which are connected the two sections 18 and 19 of the flue, these sections leading, respectively, from the fire-box (not shown), of the stove or furnace to the damper-box, and from the latter to the chimney, (not shown), the portions of the afore-mentioned walls, inclosed within said flanges being removed, as will be understood, to permit communication of the flue sections with the interior of the damper-box.

The damper 20 is arranged within its box adjacent to the wall 6, (that is to say, the wall through which the flue section 18 opens, the said section being hereinafter termed the furnace section, to more clearly distinguish it from the section 19 on the chimney side of the box and subsequently, termed the chimney section), and is here shown as in the form of a flat plate having approximately the same cross-sectional size and shape as the interior of the box. It is suspended at its upper end from a horizontal rod 21 to which it is securely attached in any desired manner and this rod is located a slight distance in front of the cover hinge rod 13 and is journaled adjacent its ends in openings in wall 8, the portions of the cover flanges directly opposite the rod ends being cut away to prevent interference therewith. In consequence of this arrangement, and mounting, the damper will normally assume a position directly against the opening at the furnace side of the damper-box and will, therefore, serve to prevent the escape of gases from the fire-box of the stove or furnace under ordinary conditions. On the other hand, any rise in pressure of the gas in the fire-box will cause the damper to open, with the result that the gas will be free to pass into the damper box and thence to the chimney, without escaping into the furnace room.

To facilitate the retention of the damper normally in closed position, and, also, to control the extent of movement of the damper in one direction, one of the projecting ends of the damper-rod 21 has secured to it a bell-crank 22, one arm of which carries a weight 23. The other arm of said bell-crank is connected to a chain, rope, or other flexible element 24, which is led upwardly over a guide pulley 25 mounted in the loop 26 provided at the upper end of a strap 27, fixed to wall 8, and this strap has its lower end formed as a claw, as indicated by the numeral 28, for engagement with the aforementioned flexible element, to hold the latter

and, consequently, the damper, in adjusted position, without, however, offering any obstruction to the automatic chimney-ward, or opening, movement of the damper due to the gas-pressure. The free end of the flexible operating element 24 is furnished with a knob, button, or the like 29.

From the foregoing, it will be apparent that the mere application of a downward pull upon the knob or other handle-part 29 of the operating element 24 will result in the bell-crank 22 being rocked in a clockwise direction, and the damper moving away from the end of the furnace section 18 of the flue, the subsequent engagement of the said element with the claw 28 serving to retain the same and, hence, the damper, in such position. It is to be understood, however, that this regulation or adjustment of the damper does not interfere with its opening movement under the influence of the gas pressure, since under ordinary circumstances, (*i. e.*, when the flexible element is either entirely free of engagement with the strap claw, or else, is engaged therewith directly adjacent the knob or other part 29), the damper will normally assume a completely, instead of a partially closed position in contact with the inner face of wall 6. It is to be understood, therefore, that the adjustment of the damper takes place entirely within the damper-box so that in consequence the temperature of the furnace room around the furnace is not lowered to any great extent when the damper is opened, as is the case when the damper merely controls a side, or air-inlet or opening in the damper-box. Also, the damper when in closed position, insures the retention of the gases in the fire-box, and in this way allows them to burn and holds them as a check to further consumption, instead of effecting a similar end by admitting cold air into the fire-box. Finally, the provision of the hinged cover enables the interior of the damper-box to be cleaned, and soot removed therefrom which might otherwise bank up against the damper and obstruct its operation.

What we claim is:—

A device of the type described, including a container arranged to be sandwiched between the sections of a heater smoke-pipe, a damper suspended at one edge within said container, for controlling the products of combustion receiving end of said container, suspending means for said damper bearing laterally in said container, said damper suspending means being equipped with an end-weighted bell-crank, a flexible member connected to said bell-crank oppositely its weighted end, a claw-like member, and a rotary guiding member, said flexible member being passed over said rotary guiding member and engaged by said claw-like member, said damper, suspending means and bell-crank all having fixed relation for simultaneous movement.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK D. LEIGHTON.
FRANK H. DRAKE.

Witnesses:
JOSEPH L. POOR,
CHAS. A. CARPENTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."