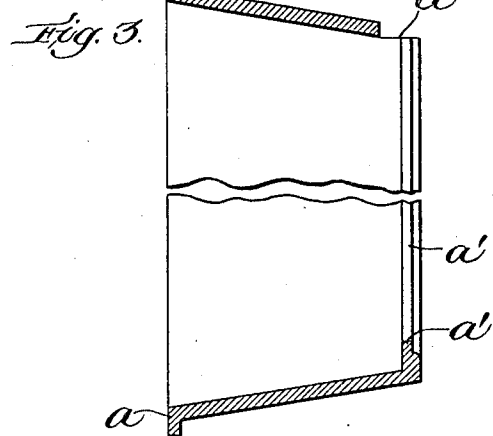
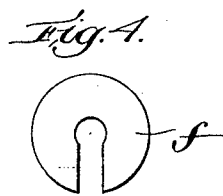
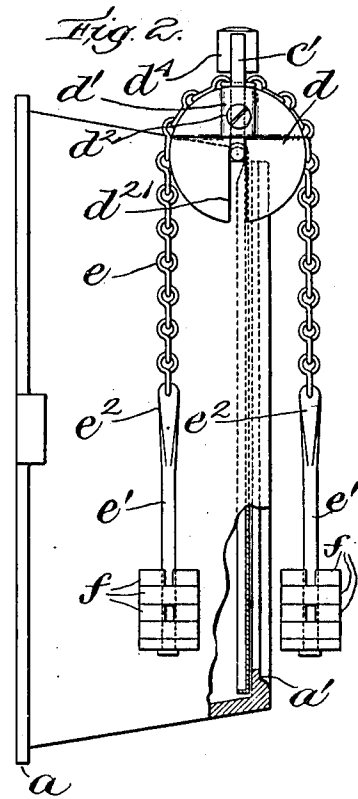
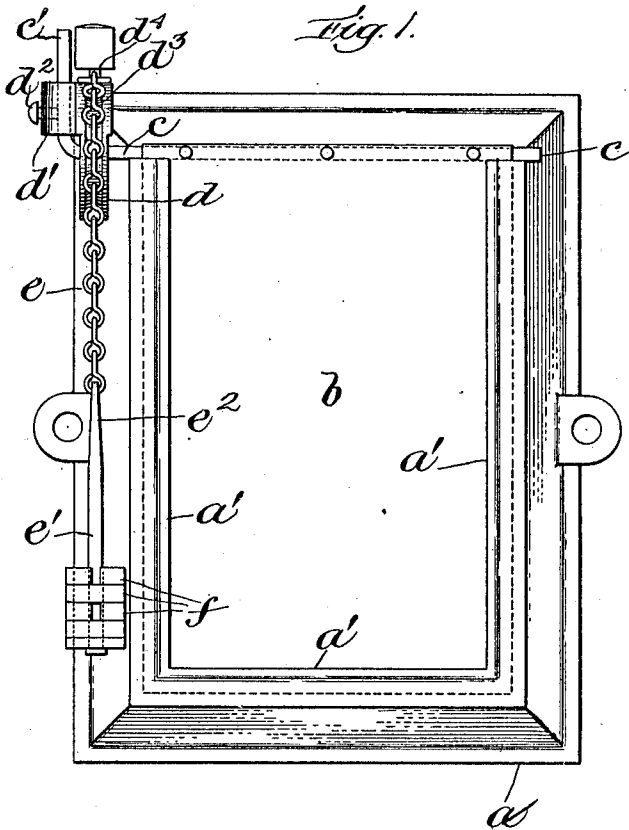


W. B. FOWLER.
DRAFT REGULATING DAMPER.
APPLICATION FILED JUNE 3, 1910.

984,550.

Patented Feb. 21, 1911.



Witnesses:
Arthur W. Randall,
Nathaniel A. Dugan.

Inventor:
Walter B. Fowler
by Geo. N. Goddard Atty.

UNITED STATES PATENT OFFICE.

WALTER B. FOWLER, OF LAWRENCE, MASSACHUSETTS.

DRAFT-REGULATING DAMPER.

984,550.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed June 3, 1910. Serial No. 564,785.

To all whom it may concern:

Be it known that I, WALTER B. FOWLER, citizen of the United States, and resident of Lawrence, county of Essex, Massachusetts, have invented certain new and useful Improvements in Draft-Regulating Dampers, of which the following is a specification.

This invention relates to draft-regulating dampers and is intended to provide a simple and efficient means for maintaining a properly regulated control over such a damper to control, under varying conditions, the admission of air into the smoke pipe, flue or chimney, to which the damper is applied.

One of the features characterizing the present invention resides in the construction and arrangement of the supporting frame or casing and the damper by which the instantaneous removal or insertion of the damper is permitted and also the tendency of the damper mechanism to become rusted in the frame is overcome.

Another important feature of the invention consists in the construction and arrangement by which the adjustment of the pressure-regulating device controlling the action of the damper is effected to suit varying conditions.

These and other features of the invention will be more particularly explained in the specification following and will be defined in the claims forming part thereof.

In the drawings I have shown the preferred form of embodying my aforesaid improvements, of which—

Figure 1 is a front elevation of the complete device ready for application to service; Fig. 2 is a side elevation partly broken away; Fig. 3 is a vertical central section of the frame or casing; and Fig. 4 is a detail plan view of one of the regulating weights.

In the practice of my invention according to the form illustrated, I employ a supporting frame or casing adapted to be located over the opening in the flue or chimney where it is to be used. The casing *a* here shown is in the form of a rectangular box but any appropriate form may be used. Preferably the walls forming the top, sides and bottom of this casing or frame are inclined inwardly. The forward edges of the opposite sides and of the bottom of the casing are provided with inturned flanges *a'*, while the top of the frame terminates a slight distance short of the vertical plane coinciding with the inside face of these

flanges so as to leave open or unobstructed shoulders *a²* to receive and support the ends of the damper shaft. The width of the space or slot between the front edge of the top and the rear or inside face of the flanges *a'* should be of a width approximately equal to the thickness of the damper and the shaft to which it is attached, so that when the damper is in position this space is practically closed.

The damper itself comprises a sheet metal plate *b* rigidly secured to a shaft *c*, the damper plate being of a width to overlap the inside edges of the continuous flange *a'* yet not wide enough to bind against the side or bottom walls. The shaft *c* is formed with an upward extension or band *c'* and on this extension is adjustably supported a sheave or pulley *d*. This sheave or pulley *d* is provided on its outer face with a projecting boss *d'* which is bored vertically to receive the extension *c'* of the damper shaft. This boss is also provided with a set screw *d²* so as to permit the adjustment of the sheave up and down said extension arm *c'*. The sheave *d* is also provided with a radial slot shown at *d¹* which extends from the periphery somewhat beyond the center of the sheave so that the sheave may be adjusted with the sides of the slot astride of the shaft with the center of the sheave concentric with the axis of rotation of the shaft. Around the periphery of the sheave is formed the groove *d³* which receives a chain *e* or similar flexible support, the same being held in position on the sheave by means of a removable pin *d⁴*. Each end of the weight-carrying chain *e* is provided with a weight-carrying rod *e'* which is of the usual construction employed in scales except that instead of being cylindrical for its whole length, the upper part of these rods are flattened as shown at *e²*. The counterbalancing weights *f* are formed with keyhole slots, the enlarged central portion of the slot being of a size to receive the round portion of the weight rod *e'*, while the narrower portion of the slot is of sufficient width to pass over the thin or flat upper portion of the rod. By this construction, the weights when in operative position shown in Fig. 2, are securely locked against any accidental displacement which would cause them to fall off the weight rods.

By reason of the peculiar construction of the casing it is possible to remove or to in-

sert the damper without the slightest difficulty, since all that is necessary is to lift it vertically. Moreover, with this construction no nice fitting is required and the difficulty of the sticking or binding of the damper due to the rusting of the parts, which I have encountered in the construction shown in my earlier Patent No. 656,959 dated August 28, 1900, is entirely overcome.

By the system of counterbalance weights, I obtain a wide range of regulation and where the draft is unusually strong it is possible by adjusting the sheave to a higher point above the damper shaft to get a longer leverage and more powerful action of the weights. According to the arrangement of counterbalance weights therefor, the raising and lowering of the adjustable sheave will result in lessening or increasing of the current of air admitted through the damper passage into the flue or offtake.

In practice the action is as follows:—When the damper *b* is closed, which is its normal position due to the action of regulating weights, the draft in the flue with which the damper communicates is unaffected. If, however, the force of the draft becomes too great, the effect is to produce a partial vacuum on the inside of the damper so that the pressure inside is less than the action of the outside atmospheric pressure, hence the damper opens to admit the outside air, which results in checking the draft. By reason of the adjustment of the sheave away from the center, the action of the controlling weight becomes greater and greater, the wider the damper opens, so as to afford a continually increasing resistance to the opening of the damper, and an increasing tendency to return the damper to closed position. This regulation makes it possible to prevent the checking of the draft too suddenly, while the initial opening of the damper is regulated and controlled by the adjustment of the counterbalance weights.

What I claim is:

1. A draft-regulating damper embracing in its construction a hollow frame or casing open at front and rear, a damper-supporting shaft, a damper plate secured thereto and suspended therefrom to close the front opening, a pulley or sheave secured to said shaft adjustable from concentric to eccentric position with relation to said shaft, and regulating weights suspended by means passing over and secured to said pulley, substantially as described.

2. In a draft-regulating damper the combination with the casing or frame, of the damper, its supporting shaft provided with an upturned arm, a sheave adjustable up and down said arm, a chain passed over said sheave and secured thereto, the ends of said chain being provided with weight-carrying means, substantially as described.

3. In a draft-regulating damper the combination of a casing, the swinging damper, the shaft to which said damper is secured, said shaft being provided with an upturned arm, a sheave adjustably secured to said arm and provided with a radial slot adapted to receive said shaft to permit the sheave to be centered on the shaft, a weight-carrying chain secured to said sheave, substantially as described.

4. The combination of the casing or frame, the swinging damper and its supporting shaft, a sheave secured to said damper, a chain secured to said sheave, a weight rod secured to each end of said chain, said weight rod being of cylindrical form and flattened at its upper end, a series of weights provided with keyhole slots for permitting their being attached to said rod and automatically locked thereto, substantially as described.

In witness whereof, I have subscribed the above specification.

WALTER B. FOWLER.

In the presence of—

G. A. ROCKWELL,

GEO. N. GODDARD.