June 5, 1928. 1,672,758

A. GIVEN

AUTOMATIC DAMPER

Filed May 23, 1927

Fig. 1

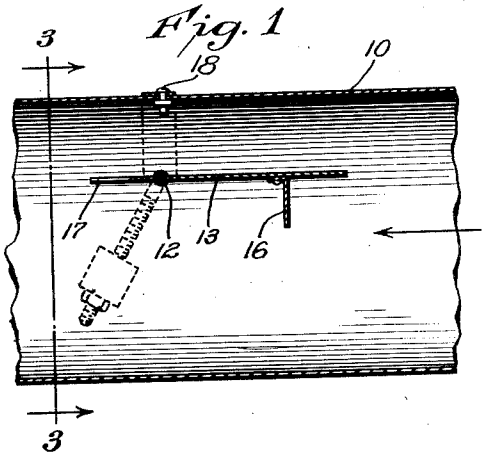


Fig. 2.

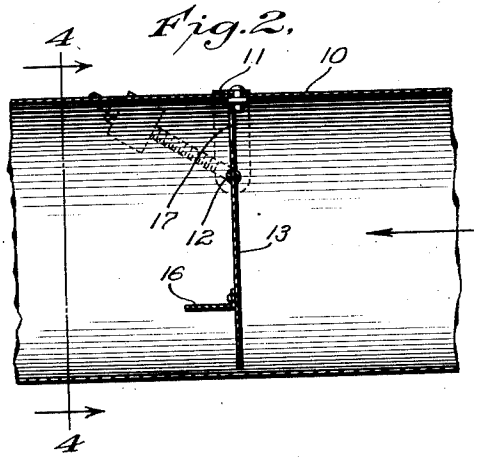


Fig. 3.

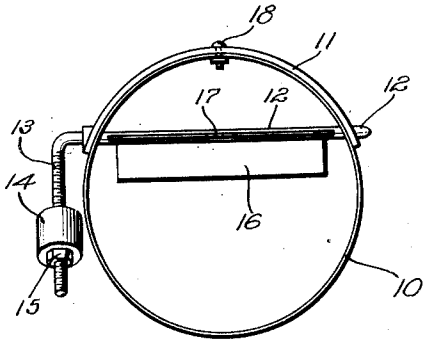
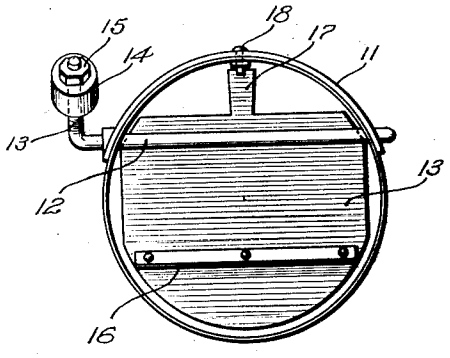


Fig. 4.



WITNESSES

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AUTOMATIC DAMPER.

Application filed May 23, 1927. Serial No. 193,667.

The present invention is concerned with the provision of an automatic heat regulating device in the nature of a counter balanced damper primarily designed to give an even heat by controlling the draft escaping through the stovepipe, smokestack or other outlet conduit for hot gases and products of combustion from a heater.

One object of the invention is to provide a normally open damper adapted to be closed by the draft through a flue whenever the draft exceeds a predetermined minimum, and to provide an adjustable counter balance, so that the draft necessary to initiate movement of the damper and maintain it in closed position, may be predetermined in accordance with the needs of any particular heating system.

Another object is to provide an automatic damper of this character so designed that it will never completely block the passage of flue gases, and which consequently, will avoid the danger of explosions which might occur if the gases were completely choked.

Other objects of the invention are to provide an automatic heat controlling device of the character noted above, which will be of simple, practical construction, rugged and durable in use, and well suited to the requirements of economical manufacture.

With the above noted and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter set forth and pointed out in the claims. The invention may be more fully understood from the following description in connection with the accompanying drawings, wherein—

Fig. 1 is a fragmentary longitudinal sectional view through a flue showing my improved damper in its normal open position.

Fig. 2 is a view similar to Fig. 1, but showing the damper after it has been moved to closed position by the draft through the flue.

Figs. 3 and 4 are transverse sectional views on the lines 3—3 and 4—4 of Figs. 1 and 2 respectively.

In the drawings, illustrative of simply one preferred embodiment of the invention, I have used the reference character 10 to designate a pipe which may represent a flue, smokestack, or other conduit through which hot gases and products of combustion pass from a firebox to the outer air. Embracing the upper portion of the pipe 10 is an arcuate metallic strip 11 in the nature of a saddle, the ends of which provide bearings for a transversely extending shaft 12, this shaft being preferably arranged well above the center of the flue, and having rigidly fixed thereto a damper plate 13.

The projecting end of the shaft 12 is right-angularly offset at 13, and threaded for the reception of a counter balancing weight 14 locked in any adjusted position by a nut 15. The normal balanced position of the device is illustrated in Fig. 1, in which position it will be noted that the weight 14 is simply heavy enough to hold the damper 13 in approximately horizontal position, or in parallelism with the longitudinal axis of the flue 10. Projecting at right angles from the damper 13, near the free end of the latter, is a short plate 16 against which the current of air, and other gases travelling along the flue 10 impinges. When this draft becomes strong enough, it acts on the plate 16 to tilt the damper against the action of the damper counterweight. Such slight tilting movement exposes the main damper surface to the action of the draft, and the damper is swung to the closed position of Fig. 2, movement beyond this position being prevented by the engagement of a tongue or tail piece 17 on the damper with a bolt 18 or other stop member. It will be noted that on both sides of the tongue, and in fact, around all sides of the damper, a passageway is left in order to prevent the complete choking off of the draft, and to obviate the possible danger of an explosion if the damper were tightly shut.

It will be understood that as the fire becomes hot, the draft in the flue 10 will become stronger, the damper being automatically closed when the firebox reaches the desired temperature. As the damper is closed and the draft cut off, the fire will become less intense; reducing the draft and eventually permitting the counter-balance to shift the damper from the position of Fig. 2 to the position of Fig. 1. Thus the automatic damper prevents the production of too intense a heat, and yet maintains a substantially even and uniform heat.

Various changes and alterations might be made in the general form and arrangement of parts described without departing from the invention. Hence I do not wish to limit

myself to the details set forth, but shall consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. The combination with a flue, of a shaft extending transversely thereof, a damper in the flue rigidly connected to the shaft, an angular extension at one end of the shaft, and a counter-balancing weight thereon acting to normally maintain the damper in substantial parallelism with the longitudinal axis of the flue, a fin disposed at right angles to the damper plate, upon which a flue draft is adapted to impinge to initiate movement of the flue toward closed position, a saddle bearing partially encircling the flue pipe and providing rotary mounting for the damper bearing shaft.

2. The combination with a flue, of a shaft extending transversely thereof, a damper in the flue rigidly connected to the shaft, an angular extension at one end of the shaft, and a counter-balancing weight thereon acting to normally maintain the damper in substantial parallelism with the longitudinal axis of the flue, the damper including a tail piece to limit the swinging movement thereof under the impetus of a flue draft.

3. The combination with a flue, of a shaft extending transversely thereof, a damper in the flue rigidly connected to the shaft, an angular extension at one end of the shaft, and a counter-balancing weight thereon acting to normally maintain the damper in substantial parallelism with the longitudinal axis of the flue, the damper including a tail piece to limit the swinging movement thereof under the impetus of a flue draft, and in its closed position providing a small amount of draft space to prevent the choking of gases in the flue.

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