Nov. 18, 1941. C. W. LONG 2,262,948

AUTOMATIC DAMPER

Filed Dec. 9, 1940

Fig. 1.

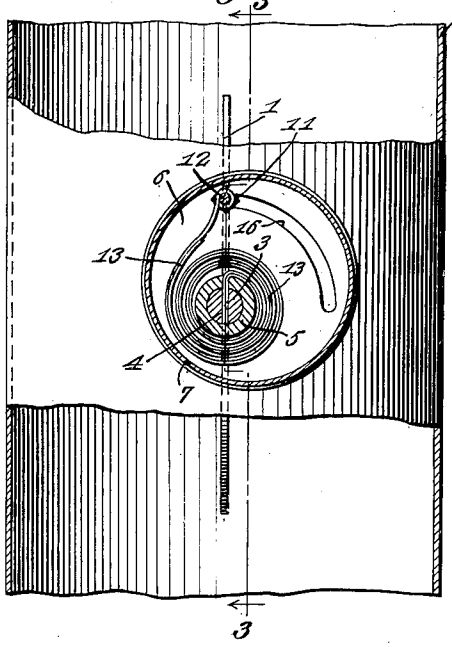


Fig. 2.

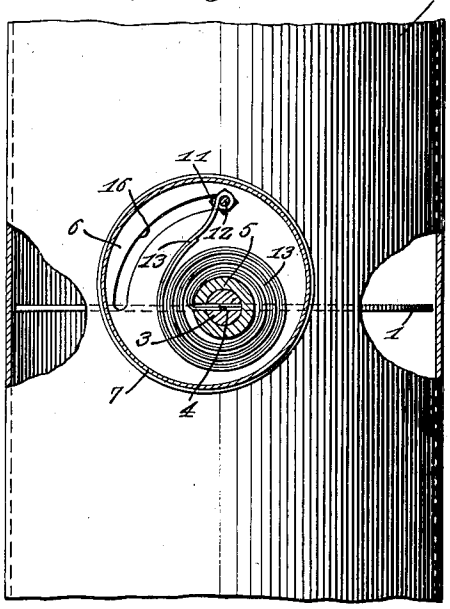


Fig. 3.

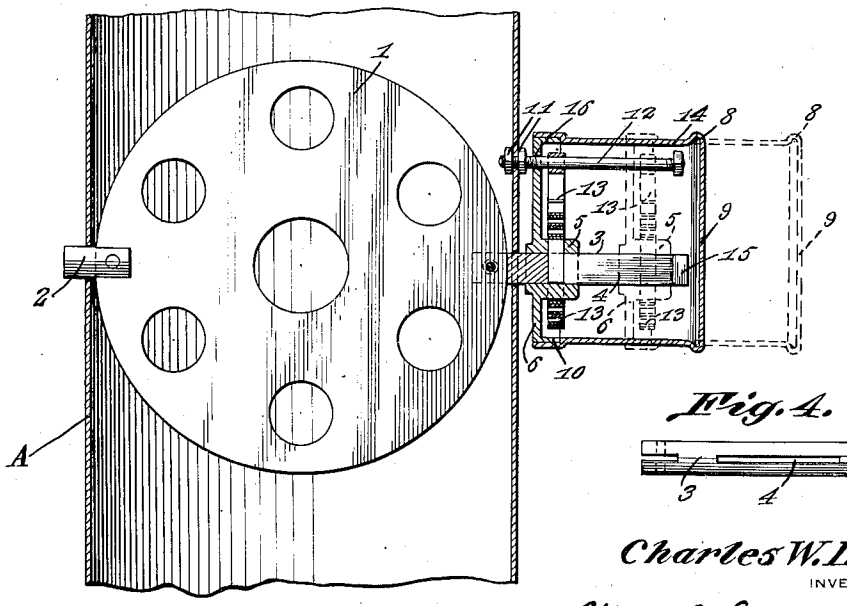


Fig. 4.

Charles W. Long,
INVENTOR

BY Victor J. Evans & Co.

WITNESS

ATTORNEYS

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AUTOMATIC DAMPER

Charles W. Long, Albertville, Ala.

Application December 9, 1940, Serial No. 369,311

2 Claims. (Cl. 236—96)

This invention relates to automatic dampers for stoves and furnaces, and its general object is to provide a damper that is automatically operated for controlling combustion by regulating the draft through the usual flue pipe, the damper being operated by and in accordance with the flue pipe temperature, and includes a thermostat element connected to the damper plate for moving the same to various positions to and between complete open and closed positions.

A further object is to provide an automatic damper that includes a thermostat element that can be manually adjusted in spaced relation with respect to the flue pipe to vary the action of the heat on the element, thus allowing a better control of the draft under all conditions.

Another object is to provide an automatic damper that is simple in construction, inexpensive to manufacture, easy to install, and is extremely efficient in operation, use and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a fragmentary side elevation illustrating my damper installed within a flue pipe, and with the damper plate in fully open position.

Figure 2 is a similar view with the damper plate in fully closed position.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a detail view of the stub shaft.

Referring to the drawing in detail, the letter A indicates a flue pipe which is of course disposed between a stove, furnace or the like, and the flue or chimney, and has mounted therein for rotation a disk type damper plate 1, through the medium of a panel lug 2 and a stub shaft 3 fixed to the plate and extending from diametrically opposite sides thereof, as well as through the pipe, as clearly shown in Figure 3. The plate 1 is provided with the usual minimum draft openings and is of a diameter to allow for free rotation thereof within the pipe, as will be apparent upon inspection of Figure 2.

The stub shaft is of a length to extend a considerable distance outwardly of the pipe and has a slot 4 extending longitudinally therein from its outer end for the major portion of its length, as best shown in Figure 4. Slidably mounted on the shaft is a hub 5 that is formed on or otherwise fixed to the disk like inner wall 6 of a cylindrical housing, and the remaining portion of the housing is in the form of a cap 7 that is beaded as at 8, at the juncture of the outer wall 9 with the cylindrical wall of the housing, to provide annular thumb and finger gripping means. The disk like inner wall 6 is provided with an annular flange 10 extending from the periphery thereof to frictionally receive the cap 7 with sufficient pressure, so that the housing can be moved along the length of the shaft 3 upon gripping the bead 8, for a purpose which will be later apparent.

Fixed to the pipe A by lock nuts 11 is a bolt like pin 12 extending outwardly from the pipe for disposal within the housing, parallel with the shaft 3, and mounted on the pin for slidable movement is the eyed outer end of a coiled bimetallic thermostat element 13 consisting of a pair of strips of metal, each having different coefficients of expansion. The inner end of the element 13 extends through the hub 5 and is mounted in the slot 4, for securing the housing to the shaft for slidable movement thereon through the medium of the hub, so that the element 13 will be moved upon movement of the housing, as will be apparent upon inspection of Figure 3. The outer end of the pin 12 has a nut 14 thereon, while the outer end of the slot 5 is plugged by a wedge 15 to provide abutment means to limit the slidable movement of the housing outwardly of the shaft.

In order to limit rotation of the plate 1 to its open and closed position of Figures 1 and 2 respectively, it will be noted that the pin 12 in its passage into the housing extends through an arcuate slot 16 in the disk like wall 6, so that when one end of the slot 16 contacts the pin, the plate 1 is fully closed and when the opposite end contacts the pin, the plate is fully open.

From the above description and the disclosure in the drawing, it is believed that the operation of my device will be obvious, but the following might be mentioned. Assuming that there is no fire within the furnace or stove from which extends the flue pipe or that a fire therein is very low, it will be apparent that the thermostat element is contracted to its normal position to hold the plate 1 completely open, as shown in Figure 1, to create a full draft. When the fire provides a temperature of a sufficient degree within the flue pipe to expand the thermostat element, the latter will rotate the plate 1 until it assumes a

position relative to the temperature and the element will then move the plate one way or the other to retain a draft proportional to the intensity of the fire, consequently it will be seen that the damper is automatically operated in accordance with the temperature changes within the flue pipe to control the draft. It will be further obvious that the operation of the thermostat element can be manually controlled by adjusting the position thereof with respect to the pipe, through the medium of the housing, as will be apparent from the full and dotted line positions of the parts, as shown in Figure 3.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. An automatic damper for a flue pipe of a stove, comprising a disk like damper plate, means including a shaft secured to the plate for rotatably mounting the latter within the pipe for controlling the draft therethrough, said shaft extending exteriorly of the pipe, disk means fixed to the shaft and having an arcuate slot therein, a bolt like pin secured to the pipe and extending through the slot for the ends of the latter to contact the pin to limit movement of the plate to complete opened and closed positions, a coiled thermostat element having its outer end connected to the pin and its inner end connected to the shaft for rotating the damper plate in accordance with temperature changes, and a cap detachably secured to the disk means for cooperation therewith to provide a housing for the thermostat element.

2. An automatic damper for a flue pipe of a stove, comprising a damper plate, means including a shaft secured to the plate for rotatably mounting the latter within the pipe for controlling the draft therethrough, said shaft extending exteriorly of the pipe and having a slot longitudinally disposed therein, a disk including a hub slidably mounted on the shaft, said disk having an arcuate slot therein, a bolt like pin secured to the pipe and extending through the arcuate slot for the ends of the latter to contact the pin to limit movement of the plate to complete opened and closed positions, a coiled thermostat element having its outer end connected to the pin for slidable movement thereon, said element having its inner end extending through the hub and into the slot of the shaft for slidable movement with the hub and for rotating the damper plate in accordance with temperature changes, a flange formed on the periphery of the disk, a cap detachably associated with the flange for cooperation with the disk to provide a housing for the thermostat element, and gripping means included in the cap to facilitate sliding the housing to adjust the position of the thermostat element with respect to the pipe.

CHARLES W. LONG.