

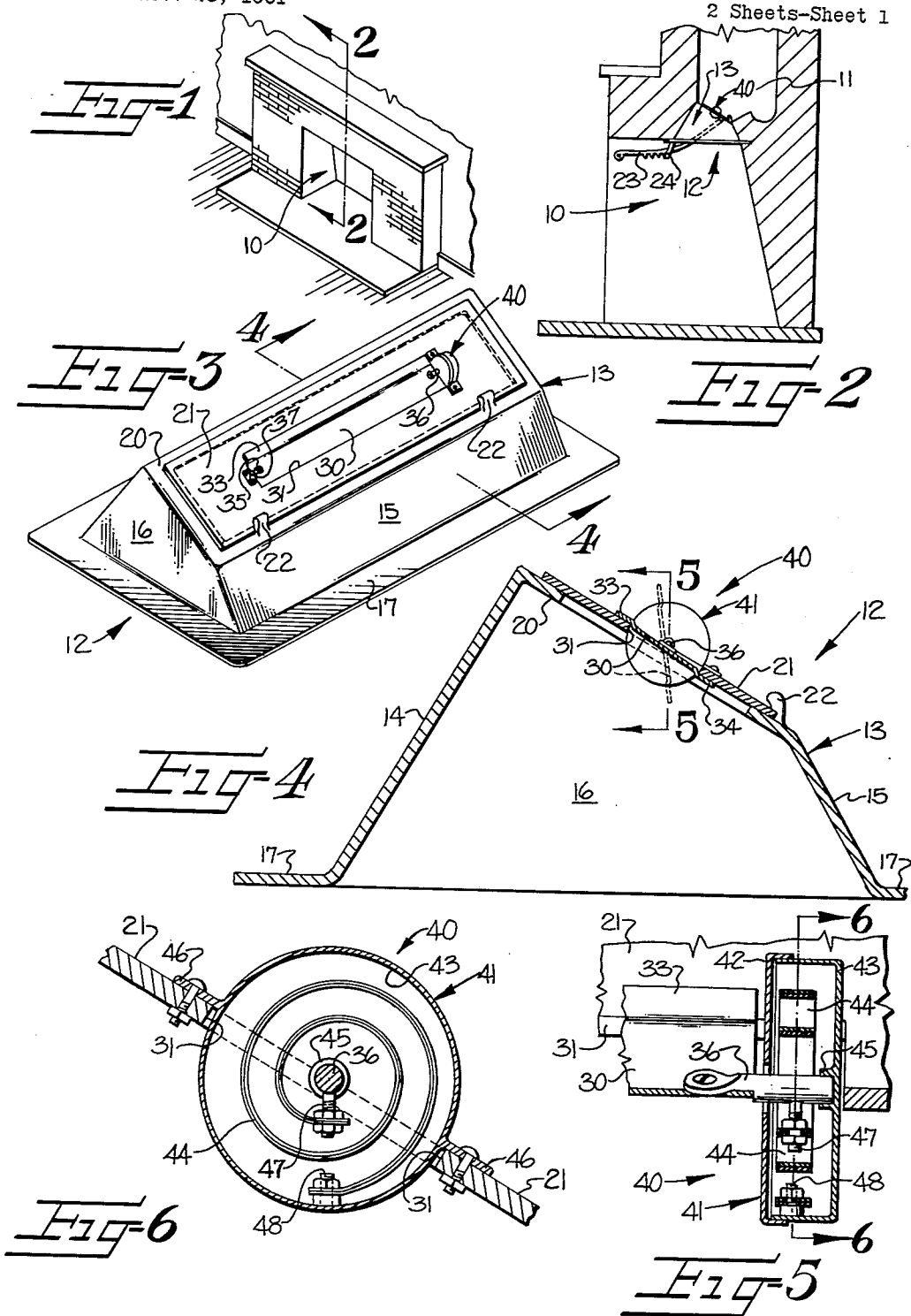
May 26, 1964

H. A. KANOY

3,134,377

THERMOSTATIC CONTROL FOR FIREPLACE DAMPER

Filed Nov. 21, 1961



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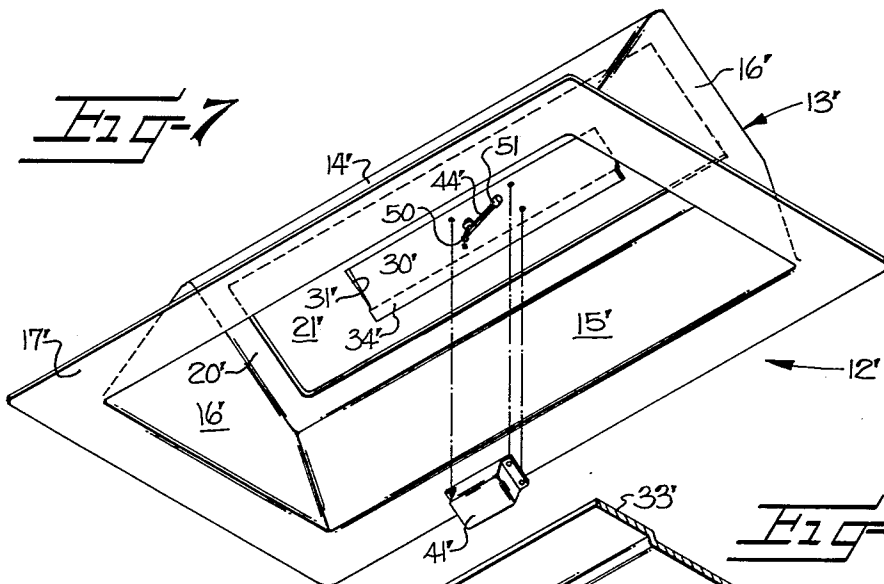
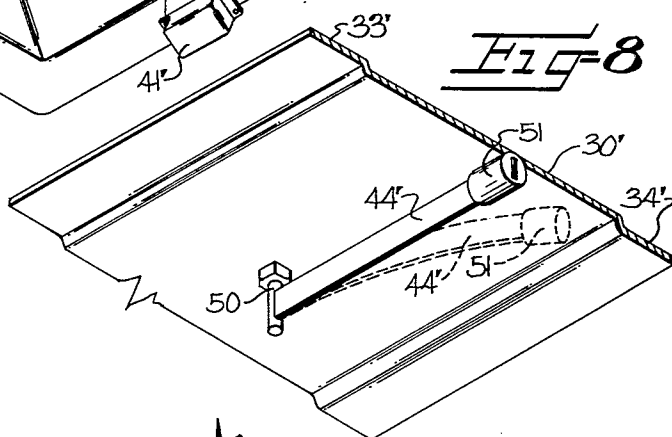
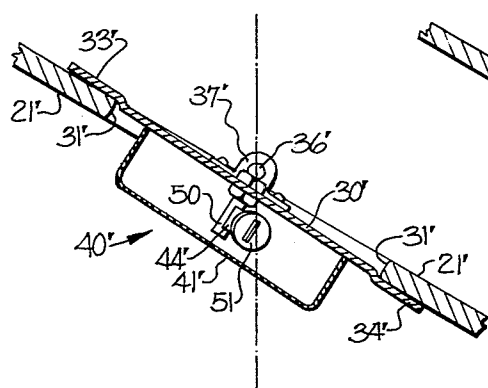
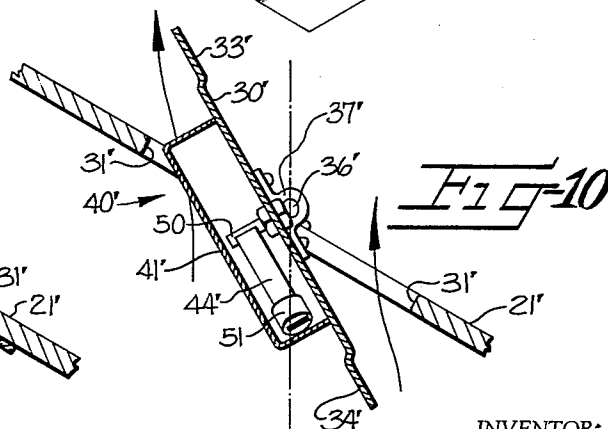
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THERMOSTATIC CONTROL FOR FIREPLACE DAMPER

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2 Sheets-Sheet 2



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1

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THERMOSTATIC CONTROL FOR FIREPLACE DAMPER

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7 Claims. (Cl. 126—288)

The present invention relates generally to fireplace dampers and more particularly to a thermally responsive auxiliary damper in association with a main fireplace damper to permit the products of combustion from smoldering portions or dying embers of a fire in the fireplace to be exhausted through the flue opening when the main damper has been closed after the fire has been substantially extinguished.

A frequent annoyance associated with the use of fireplaces is the backing-up of smoke, soot, and other products of combustion into the room in which the fireplace is located, following the closing of the flue opening in the fireplace by the damper after a fire in the fireplace has been substantially extinguished. As is well known, the remains of an extinguished fire are apt to smolder for some time which usually causes the person attending the fire to leave the damper open for permitting the products of combustion from the smoldering portions of the extinguished fire to escape through the flue opening in the fireplace. If the damper is immediately closed after the fire has been put out, the aforesaid annoyance often occurs and can create a fire hazard as well as an atmospheric condition unfit for breathing. Since the smoldering portions or dying embers of the fire may continue to smolder for a considerable period of time after the fire has been extinguished or has burned itself out, a person attending the fire does not normally desire to remain on hand until the smoldering stops and the fire is completely dead so that the damper can then be closed. Consequently, the fire is usually left unattended after it has been substantially extinguished, and the damper is left open. When the damper for the fireplace is left open, a considerable heat loss may ensue because of windy down drafts through the flue opening in the fireplace and the escape of heat from the room through the open flue.

Accordingly, it is a primary object of the present invention to provide an improved fireplace damper whose operation is affected by a thermally responsive control, wherein the damper comprises a main damper having a vent therein coinciding with the flue opening of the fireplace and an auxiliary damper movable between positions closing and opening the vent in the main damper in response to changes of temperature in the fireplace, with the auxiliary damper being in position opening the vent when the temperature in the fireplace exceeds a predetermined magnitude (ambient room temperature). Thus, following the extinguishing of a fire in the fireplace, the main damper may be immediately closed, the auxiliary damper being operable to maintain the vent open for exhausting the products of combustion from smoldering portions of the fire through the vent and the flue opening until the fire is completely dead. Upon the temperature in the fireplace dropping to the predetermined magnitude, the auxiliary damper is effective to close the vent in the main damper. In this way, the hazards and annoyance associated with the blocking of smoke, soot, and other products of combustion from a fire in a fireplace by a damper closing the flue opening are avoided. The improved fireplace damper is also effective to avoid such blocking of products of combustion when a fire has been started in the fireplace, as well as when the fire has been extinguished, while any heat loss through the flue can be held to minimal levels by promptly closing the main damper subsequent to extinguishing the fire and rely-

2

ing upon the thermally responsive auxiliary damper to eventually close the vent in the main damper when the fire has completely died and no longer smolders.

The primary object of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

FIGURE 1 is a perspective view of a fireplace in which an improved fireplace damper in accordance with the present invention is installed;

FIGURE 2 is a fragmentary vertical sectional view taken along the line 2—2 of FIGURE 1, and showing the damper in a position closing the flue opening in the fireplace;

FIGURE 3 is a perspective view looking down on one form of damper assembly according to the present invention and showing the main damper and the auxiliary damper associated in fully closed position;

FIGURE 4 is an enlarged transverse vertical sectional view taken along the line 4—4 in FIGURE 3, an open position of the auxiliary damper being shown in phantom lines;

FIGURE 5 is a greatly enlarged fragmentary longitudinal sectional view taken along the line 5—5 in FIGURE 4 and showing the thermostatic control mechanism for the auxiliary damper;

FIGURE 6 is a transverse vertical sectional view taken along the line 6—6 in FIGURE 5;

FIGURE 7 is a perspective view looking upward into another form of damper assembly according to the present invention and showing the main damper and the auxiliary damper associated therewith in fully closed position, parts of the auxiliary damper being illustrated in exploded relation for purposes of clarity;

FIGURE 8 is an enlarged fragmentary perspective view of a portion of the auxiliary damper illustrated in FIGURE 7, and showing the position assumed by a counterweighted strip thermostat when the auxiliary damper is in fully open position in phantom lines;

FIGURE 9 is an enlarged fragmentary vertical sectional view of the damper assembly illustrated in FIGURE 7, showing the auxiliary damper in fully closed position; and

FIGURE 10 is an enlarged fragmentary vertical sectional view similar to FIGURE 9, but showing the auxiliary damper in a position opening the vent through the main damper.

Referring more specifically to the drawings, one form of the improved fireplace damper in accordance with the present invention is illustrated in FIGURES 1—6, inclusive. It will be observed that FIGURES 1 and 2 show a fireplace 10 with which the improved damper is associated, the fireplace 10 including a flue 11 through which the products of combustion from a fire in the fireplace 10 are exhausted in the usual manner. A damper assembly 12 is mounted in the flue 11, the damper assembly 12 including a main damper plate, to be hereinafter described, which is mounted for movement between positions closing and opening the flue opening. The damper assembly 12 may be of any convenient type which provides a damper plate and means for manually moving the damper plate so as to close and open the flue opening.

As illustrated, the damper assembly 12 comprises a box-like frame 13 formed by front and rear frame members 14, 15, end frame members 16, 16, and a marginal horizontal flange 17 integral with the lower edges of the front, rear and end frame members—the marginal flange 17 being suitably affixed to the masonry construction of the fireplace 10, such as shown in FIGURE 2. It will be noted that the front and rear frame members 14, 15 are disposed in upwardly converging relationship, the front

frame member 14 being appreciably greater in height than the rear frame member 15 so as to provide the frame 13 with a rearwardly and downwardly slanting top. The top of the frame 13 comprises an open rectangular top frame member 20 forming a border extending inwardly of the respective top edges of the front, rear, and end frame members so as to define an opening coinciding with the flue opening when the damper assembly 12 is mounted in place in the fireplace 10.

A main damper in the form of a main damper plate 21 is mounted for pivotal movement on the frame 13 between positions closing and opening the flue opening coinciding with the opening defined by the top frame member 20. In this connection, it will be observed that the main damper plate 21 is adapted to be superimposed over the inner portions of the top frame member 20 when the main damper plate 21 is disposed in a position closing the flue opening, with the lower edge of the main damper plate 21 being pivotally connected to the corresponding lower border portion of the top frame member 20 by suitable means, such as the projecting ears 22, 22 on the lower border portion of the top frame member 20 to which the lower edge of the main damper plate 21 is pivotally secured.

As shown in FIGURE 2, a curved handle 23 is attached to the undersurface of the main damper plate 21 so as to depend therefrom with the free end of the handle 23 being accessible from the front of the fireplace 10. The handle 23 includes a plurality of notches for respective reception of a loop member 24 affixed to the damper assembly 12 and depending therefrom within the fireplace 10. It will be understood that the handle 23 extends through the loop member 24 and may be manually adjusted to receive the loop member 24 in any one of the notches therein for adjusting the main damper plate 21 between a plurality of positions varying the restriction of the flue opening by the main damper plate 21. The foregoing description relates to a common form of damper assembly for a fireplace in general use.

In accordance with the present invention, it will be observed, particularly in FIGURES 3 and 4, that an auxiliary damper means in the form of an auxiliary damper plate 30 is associated with the main damper plate 21. In this connection, the main damper plate 21 is provided with an elongate slot or vent 31 in the central portion thereof which is adapted to be opened and closed by the auxiliary damper plate 30 in response to changes in temperature in the fireplace 10 in a manner to be presently described.

It will be noted that upper and lower edge portions of the auxiliary damper plate 30 are respectively offset in opposite directions from the central portion of the auxiliary damper plate 30 to form upper and lower lip edges 33, 34. The upper lip edge 33 of the auxiliary damper plate 30 is adapted to overlie a portion of the main damper plate 21 defining the upper boundary of the vent 31 therethrough, while the lower lip edge 34 of the auxiliary damper plate 30 is adapted to underlie the corresponding portion of the main damper plate 21 defining the lower boundary of the vent 31 when the auxiliary damper plate 30 is in a position closing the vent 31 through the main damper plate 21, such as is shown in full lines in FIGURE 4.

Means are provided to make the auxiliary damper plate 30 movable between positions opening and closing the central vent 31 in the main damper plate 21 in response to changes of temperature in the fireplace 10. In this connection, it is desired to maintain the auxiliary damper plate 30 in a position opening the central vent 31 at all times when the temperature in the fireplace 10 exceeds a predetermined magnitude, but to make the auxiliary damper plate 30 operable to close the central vent 31 upon the temperature in the fireplace 10 dropping to the predetermined magnitude. To accomplish this end, the invention contemplates the mounting of the auxiliary damp-

er plate 30 for movement between positions opening and closing the vent 31 in the main damper plate 21, and thermostatic control means within the fireplace 10 so as to effect the desired movement of the auxiliary damper plate 30. It will be observed that the opposite ends of the auxiliary damper plate 30 are connected to the main damper plate 21 at the opposite ends of the vent 31 for pivotal movement of the auxiliary damper plate 30 with respect to the main damper plate 21. In this respect, axles 35, 36 are fixedly secured to respective ends of the auxiliary damper plate 30 and extend outwardly therefrom. The axle 35 at one end of the auxiliary damper plate 30 is journaled in a bearing block 37 secured to the main damper plate 21 adjacent the end of the vent 31 corresponding to the axle 35. As will hereinafter appear, the axle 36 at the other end of the auxiliary damper plate 30 is also suitably journaled in a bearing element secured to the main damper plate 21 adjacent the opposite end of the vent 31.

The thermostatic control means which is designated broadly by the reference numeral 40 is disposed at the other end of the auxiliary damper plate 30 and comprises a segmental housing 41. The housing 41 includes a pair of cup-like housing elements 42, 43 having respective cylindrical shells extending in opposite directions in opposed relationship. In the latter respect, the cylindrical shell of cup-like housing element 43 is frictionally received within the cylindrical shell of cup-like housing element 42 to define a chamber in which a thermostat 44 is received. It will be observed in FIGURE 5 that the outermost cup-like housing element 43 is provided with an inwardly extending centrally disposed bearing sleeve 45 in which the axle 36 on the other end of the auxiliary damper plate 30 is journaled. The housing 41 is fixedly secured to the main damper plate 21, the housing element 43 being provided with mounting lugs 46, 46 for attachment of the housing 41 to the main damper plate 21 by suitable fastener means extending through the lugs 46, 46.

The thermostat 44 is of the bimetallic strip type wound in a helical coil, being operably connected at its innermost end to the axle 36 of the auxiliary damper plate 30 by suitable means. In this connection, it will be noted that a post 47 extends radially outwardly from the axle 36, the post 47 being threaded for reception of a pair of nuts between which the inner end of the helically coiled bimetallic thermostat 44 is sandwiched in clamped relation. The outermost end of the helically coiled thermostat 44 is fixedly secured in a similar manner to the cylindrical shell of the cup-like housing element 43 of the segmental housing 41. In this respect, a radially inwardly extending post 48 is secured to the cup-like housing element 43, being provided with a threaded inner end for reception of a nut, and the outer end of the helically coiled thermostat 44 is sandwiched between the nut and an enlarged portion of the post 48 in clamped relationship. The inner and outer ends of the thermostat 44 are preferably notched for receiving the posts 47, 48 respectively.

It will be understood that the helically coiled bimetallic strip thermostat 44 expands in response to a rise of the temperature in the fireplace 10, as when a fire is started therewithin, and correspondingly contracts upon a drop of the temperature in the fireplace 10, as when the fire therein is extinguished. In so expanding and contracting, the thermostat 44 effects pivotal movement of the auxiliary damper plate 30 about its axles 35, 36, which rotate within the bearing block 37 and the bearing sleeve 45 respectively, the auxiliary damper plate 30 being pivotally movable between positions in which the vent 31 through the main damper plate 21 is opened in varying degrees of restriction, and a position in which the auxiliary damper plate 30 closes the vent 31. The thermostat 44 and the auxiliary damper plate 30 are so arranged as to effect closing of the vent 31 by the auxiliary

5

damper plate 30 whenever the temperature within the fireplace 10 drops to a predetermined magnitude, such as a satisfactory ambient room temperature—as for example, 70° F. At all other times when the temperature within the fireplace 10 exceeds this predetermined magnitude, the thermostat 44 will be in an expanded condition to some extent depending upon the temperature within the fireplace 10, and the auxiliary damper plate 30 associated therewith will be in a position restrictively opening the vent 31 through the main damper plate 21 in varying degrees depending upon the temperature within the fireplace 10 in excess of the predetermined temperature.

Thus, it will be seen that a person can immediately manually operate the damper assembly 12 to move the main damper plate 21 to a position closing the flue opening by appropriate manipulation of the handle 23 connected to the main damper plate 21, following the extinguishing of a fire in the fireplace 10. At this time, the temperature present within the fireplace 10 will be in excess of the predetermined temperature required to maintain the auxiliary damper plate 30 in a position closing the vent 31. Accordingly, the thermostat 44 will be in an expanded condition, and the auxiliary damper plate 30 will have been pivoted to a position opening the vent 31 through the main damper plate 21, such as is shown in phantom lines in FIGURE 4. The products of combustion from any smoldering portions of the fire are thereby permitted to escape through the flue 11 by passing through the open vent 31 in the main damper plate 21. It therefore becomes unnecessary for a person attending the fire to make absolutely certain that the fire is completely out and to wait in the vicinity of the fireplace 10 until this event occurs before closing the fireplace damper when an improved fireplace damper according to the present invention is installed in the fireplace 10. The often resorted-to alternative of leaving the fireplace damper in a position opening the flue at all times during the period of the year that a fireplace is in frequent use with its consequent continual heat loss from the room in which the fireplace is located and accompanying windy downdrafts through the open flue 11 into the room is also avoided by employing the improved fireplace damper herein disclosed inasmuch as the auxiliary damper plate 30 will be moved to a position closing the vent 31 in the main damper plate 21, which itself has been earlier moved to a closed position following the substantial extinguishing of the fire, upon contraction of the helically coiled thermostat 44 when the temperature within the fireplace 10 has dropped to a predetermined magnitude, such as ambient room temperature.

Another form of improved fireplace damper in accordance with the present invention is illustrated in FIGURES 7-10, inclusive. It will be understood that like reference numerals with the prime notation added have been applied in FIGURES 7-10, inclusive, to indicate structural components similar to or identical with the structural components in the form of the invention shown in FIGURES 1-6, inclusive. In FIGURES 7-10, inclusive, the thermostatic control means 40' comprises a unitary cup-like housing 41' removably secured to the undersurface of the auxiliary damper plate 30'. A thermostat 44' is contained within the housing 41', the thermostat 44' being in the form of a thermally-responsive flexible flat elongate strip secured to the undersurface of the auxiliary damper plate 30' by a pin 50 depending therefrom to which one end of the elongate flat strip thermostat 44' is affixed. The elongate strip thermostat 44' extends laterally from the pin 50, as illustrated in FIGURE 8, so as to be disposed beneath the auxiliary damper plate 30'. A counterweight element 51 in the form of a cylindrical mass is affixed to the other free end of the elongate strip thermostat 44'.

In this particular embodiment, the elongate strip thermostat 44' and the counterweight 51 attached thereto will extend in a substantially straightforward path beneath

6

the auxiliary damper plate 30' in spaced parallel relation thereto when the temperature within the fireplace is at a predetermined magnitude, such as ambient room temperature of the order of 70° F. Upon a fire being started within the fireplace, the heat of the fire will cause a rise of the temperature in the region of the fireplace, which induces flexing or bending of the elongate strip thermostat 44', such as illustrated in phantom lines in FIGURE 8. This flexing or bending of the elongate strip thermostat 44' under the influence of rising temperature effects the pivotal movement of the auxiliary damper plate 30' about its axles to a position opening the vent 31' in the main damper plate 21'. In the latter connection, the auxiliary damper plate 30' with the thermostatic control means 40' affixed therebeneath is disposed in a position closing the vent 31' when the temperature within the fireplace is at a selected predetermined magnitude, such as ambient room temperature. It will be observed that the counterweight 51 is so located with respect to the auxiliary damper plate 30' as to tend to pivot the auxiliary damper plate 30' in a counterclockwise direction as shown in FIGURE 9, such pivoting movement of the auxiliary damper plate 30' being prevented by abutment of the upper and lower lip edges 33', 34' with the underlying and overlying portions of the main damper plate 21' forming the upper and lower boundaries of the vent 31' therethrough. However, whenever the temperature within the fireplace exceeds the predetermined magnitude, as when a fire is started or as when the remains of an extinguished fire continue to smolder, the flexing of the elongate strip thermostat 44' creates a tendency for the counterweight 51 to be moved to the right of a vertical center-line passing through the pivotal axis of the auxiliary damper plate 30', as shown in FIGURE 9, thereby upsetting the equilibrium of the auxiliary damper plate 30' in abutment with the portions of the main damper plate 21' bordering the upper and lower edges of the vent 31' therethrough. In this way, the flexed elongate strip thermostat 44' and its counterweight 51 effect the pivoting movement of the auxiliary damper plate 30' to a position opening the vent 31', as shown in FIGURE 10, since the counterweight 51 will remain in alignment with the vertical center-line passing through the pivotal axis of the auxiliary damper plate 30'. The counterweight 51 because of its weight and the influence of gravity is substantially stationary as the elongate strip thermostat 44' flexes in response to changes of temperature in the fireplace, and the auxiliary damper plate 30' pivots about its axles to compensate for the flexing of the thermostat 44' which would otherwise dispose the counterweight 51 in an offset relation to the vertical center-line through the pivotal axis of the auxiliary damper plate 30'. Thus, it will be understood that in operation, the second form of the improved fireplace damper in accordance with the present invention, as illustrated in FIGURES 7-10, inclusive, achieves the same desirable end results brought about by the first form illustrated in FIGURES 1-6, inclusive, and previously described.

It will therefore be seen that there has been disclosed an improved fireplace damper, wherein a damper assembly is provided with a main damper plate having a vent therethrough which is adapted to be opened and closed by an auxiliary damper plate movable in response to changes of temperature in the fireplace. The improved fireplace damper comprising the main damper plate and the auxiliary damper plate associated with a thermostatic control means can be readily installed in existing fireplaces by replacement of the old fireplace damper located therein with the improved fireplace damper forming the present invention. It should be further understood that it is within the spirit of this invention to so locate the vent in the main damper plate that the auxiliary damper plate may be reciprocally movable in sliding relationship to the main damper plate for accomplishing opening and closing of the vent through the main damper plate in response to changes of temperature within the fireplace.

In the drawings and specification there have been set forth preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a fireplace having a flue opening and a damper plate mounted in the fireplace for movement between positions closing and opening the flue opening;
 - (a) said damper plate being provided with a vent therethrough,
 - (b) an auxiliary damper plate,
 - (c) means mounting said auxiliary damper plate for pivotal movement between positions closing and opening the vent in said damper plate,
 - (d) said auxiliary damper plate having oppositely offset side edge portions engageable with corresponding marginal portions of said damper plate bounding the sides of the vent therethrough in overlying and underlying relation respectively when said auxiliary damper plate is disposed in the position closing the vent in said damper plate,
 - (e) thermostatic control means operably associated with said auxiliary damper plate for regulating the pivotal movement of said auxiliary damper plate in response to changes of temperature in the fireplace,
 - (f) said auxiliary damper plate being in a position opening the vent in said damper plate when the temperature in the fireplace exceeds a predetermined magnitude, and
 - (g) said damper plate being movable to a position closing the flue opening when a fire in the fireplace has been extinguished and said auxiliary damper plate being operable to maintain the vent open for exhausting the products of combustion from smoldering portions of the fire through the vent in the damper plate and the flue opening until the temperature in the fireplace drops to the predetermined magnitude.
2. In a fireplace as defined in claim 1, wherein said thermostatic control means comprises
 - (a) an expandable and contractible helically coiled bimetallic strip thermostat,
 - (b) the inner end of said helically coiled thermostat being operably connected to said auxiliary damper plate and the outer end of said helically coiled thermostat being operably connected to said damper plate, and
 - (c) said helically coiled thermostat expanding in response to a rise of temperature in the fireplace and contracting in response to a drop of the temperature in the fireplace to actuate pivotal movement of said auxiliary damper plate.
3. In a fireplace as defined in claim 1, wherein said thermostatic control means comprises
 - (a) a flexible elongated strip thermostat,
 - (b) means connecting one end of said elongated strip thermostat to said auxiliary damper plate, and
 - (c) a counterweight on the other end of said elongated strip thermostat,
 - (d) said elongated strip thermostat and said auxiliary damper plate being disposed in spaced superimposed relationship,
 - (e) said auxiliary damper plate being mounted for pivotal movement about a generally horizontal axis, and said counterweight lying within a vertical plane containing the pivotal axis of said auxiliary damper plate, and
 - (f) said elongated strip thermostat flexing in response to changes of temperature in the fireplace to actuate pivotal movement of said auxiliary damper plate which compensates for the flexing of said elongated strip thermostat tending to dispose said counterweight in vertically offset relation to the pivotal axis of said auxiliary damper plate.

4. In a fireplace having a flue opening and a damper plate mounted in the fireplace for movement between positions closing and opening the flue opening;
 - (a) said damper plate being provided with an elongate vent therethrough,
 - (b) an elongate auxiliary damper plate,
 - (c) a pair of axles on said auxiliary damper plate extending outwardly from the opposite ends thereof,
 - (d) bearing means on said damper plate located adjacent the opposite ends of the vent,
 - (e) said axles being journaled in said bearing means to mount said auxiliary damper plate for pivotal movement between positions closing and opening the vent in said damper plate,
 - (f) thermostatic control means operably associated with said auxiliary damper plate for regulating the pivotal movement of said auxiliary damper plate in response to changes of temperature in the fireplace, and
 - (g) said auxiliary damper plate being in a position opening the vent in said damper plate when the temperature in the fireplace exceeds a predetermined magnitude,
 - (h) said damper plate being movable to a position closing the flue opening when a fire in the fireplace has been extinguished and said auxiliary damper plate being operable to maintain the vent open for exhausting the products of combustion from smoldering portions of the fire through the vent in the damper plate and the flue opening until the temperature in the fireplace drops to the predetermined magnitude.
5. In a fireplace as defined in claim 4, wherein
 - (a) said thermostatic control means is located at one end of said auxiliary damper plate and the end of the vent corresponding thereto,
 - (b) said thermostatic control means comprising a housing secured to said damper plate and surrounding the axle extending from said one end of said auxiliary damper plate, and
 - (c) an expandable and contractible helically coiled bimetallic strip thermostat within said housing,
 - (d) the inner end of said helically coiled thermostat being operably connected to the axle extending from said one end of said auxiliary damper plate and the outer end of said helically coiled thermostat being operably connected to said housing,
 - (e) the bearing means on said damper plate corresponding to the axle extending from said one end of said auxiliary damper plate being disposed within said housing for receiving the latter axle, and
 - (f) said helically coiled thermostat expanding in response to a rise of temperature in the fireplace and contracting in response to a drop of the temperature in the fireplace to actuate pivotal movement of said auxiliary damper plate.
6. In a fireplace as defined in claim 4, wherein
 - (a) said thermostatic control means is located beneath said auxiliary damper plate and comprises
 - (b) a housing secured to the undersurface of said auxiliary damper plate and received in the vent through said damper plate,
 - (c) a flexible elongated strip thermostat within said housing,
 - (d) means connecting one end of said elongated strip thermostat to the undersurface of said auxiliary damper plate, and
 - (e) a counterweight on the other end of said elongated strip thermostat;
 - (f) said counterweight being vertically beneath the pivotal axis of said auxiliary damper plate, and
 - (g) said elongated strip thermostat flexing in response to changes of temperature in the fireplace to actuate pivotal movement of said auxiliary damper plate which compensates for the flexing of said elongated

9

strip thermostat tending to dispose said counterweight in vertically offset relation to the pivotal axis of said auxiliary damper plate.

7. In a fireplace having a flue opening and a damper plate mounted in the fireplace for movement between positions opening and closing the flue opening; 5

(a) said damper plate being provided with a vent therethrough,

(b) an auxiliary damper plate,

(c) means mounting said auxiliary damper plate for pivotal movement about a generally horizontal axis between positions opening and closing the vent in said damper plate, 10

(d) thermostatic control means operably associated with said auxiliary damper plate for regulating the pivotal movement of said auxiliary damper plate in response to changes of temperature in the fireplace, said thermostatic control means comprising 15

(1) a flexible elongated strip thermostat,

(2) means connecting one end of said elongated strip thermostat to said auxiliary damper plate to dispose said elongated strip thermostat and said auxiliary damper plate in spaced superimposed relationship, and 20

(3) a counterweight on the other end of said elongated strip thermostat, said counterweight lying within a vertical plane containing the pivotal axis of said auxiliary damper plate; 25

(e) said elongated strip thermostat flexing in response

10

to changes in temperature in the fireplace to actuate pivotal movement of said auxiliary damper plate which compensates for the flexing of said elongated strip thermostat tending to dispose said counterweight in vertically offset relation to the pivotal axis of said auxiliary damper plate,

(f) said auxiliary damper plate being in a position opening the vent in said damper plate when the temperature in the fireplace exceeds a predetermined magnitude, and

(g) said damper plate being movable to a position closing the flue opening when a fire in the fireplace has been extinguished and said auxiliary damper plate being operable to maintain the vent open for exhausting the products of combustion from smoldering portions of the fire through the vent in the damper plate and the flue opening until the temperature in the fireplace drops to the predetermined magnitude.

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