Aug. 15, 1961 D. D. HAAS 2,996,064

FIREPLACE DAMPER CONTROL

Filed July 18, 1958 2 Sheets-Sheet 1

Fig-1

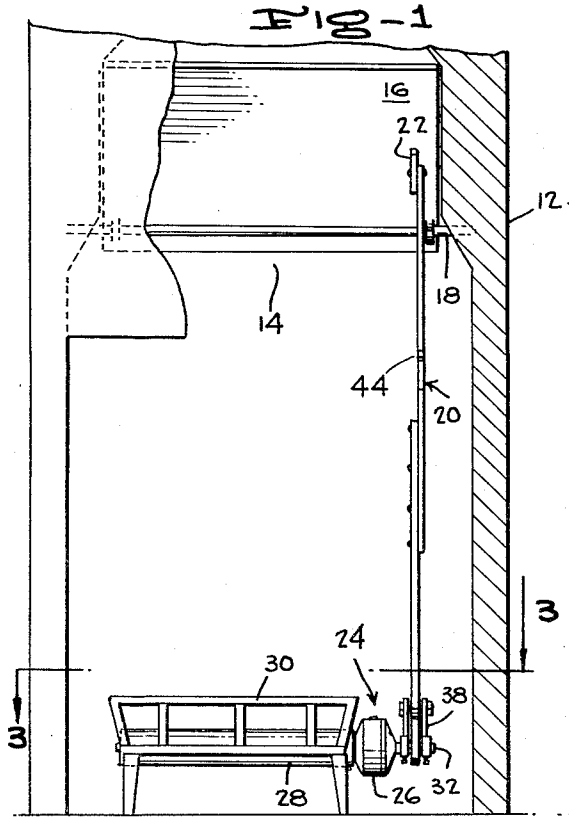


Fig-2

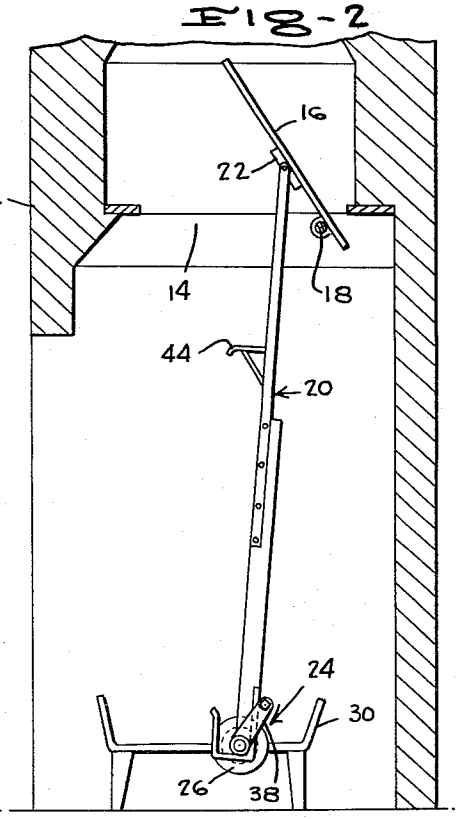


Fig-3

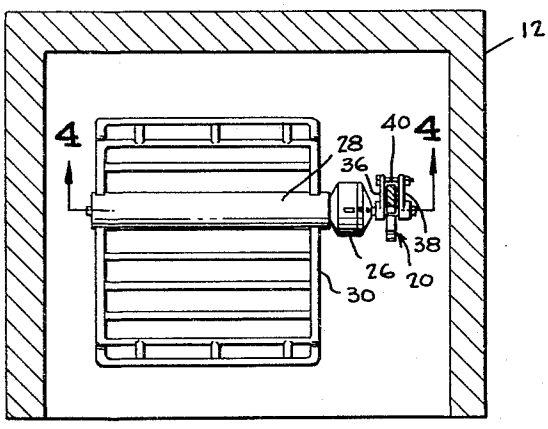
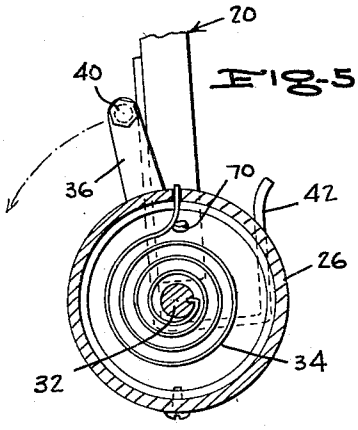


Fig-5



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FIREPLACE DAMPER CONTROL

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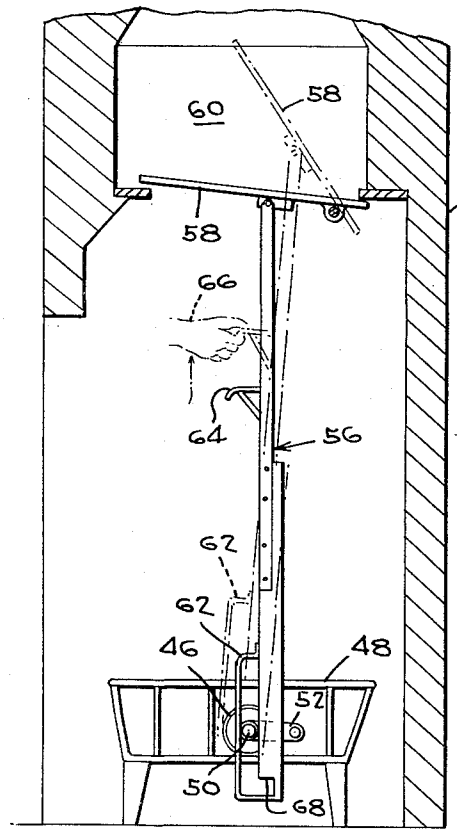


FIG-8

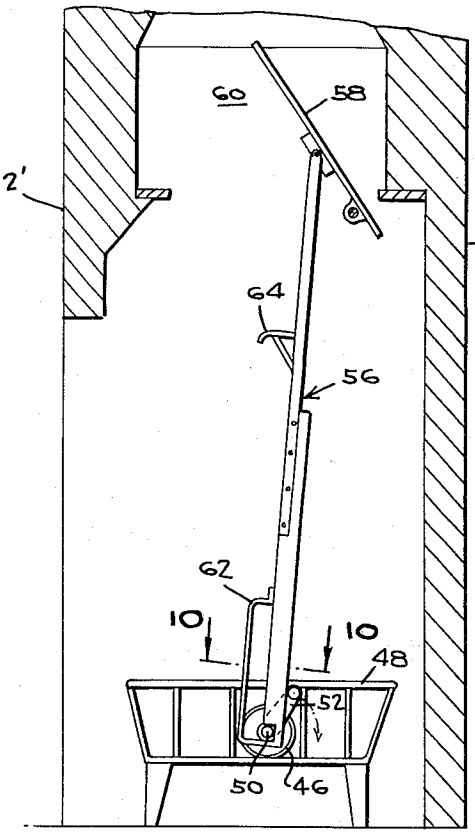
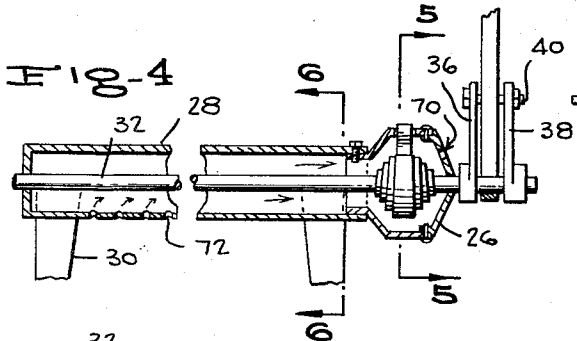


FIG-9

FIG-4



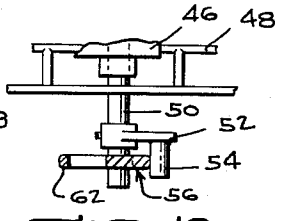


FIG-10

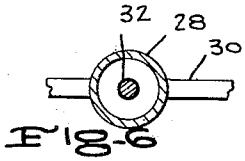


FIG-6

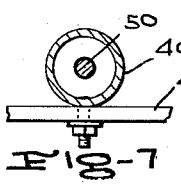


FIG-7

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FIREPLACE DAMPER CONTROL

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4 Claims. (Cl. 126—288)

The present invention relates to fireplaces generally and in particular to a thermostatic control for the flue damper in a fireplace.

An object of the present invention is to provide a fireplace damper control which effects the automatic closing of the damper when the fire goes out in the fireplace.

Another object of the present invention is to provide a fireplace damper control which lends itself to holding the damper in the open position while there is a fire in the fireplace.

A further object of the present invention is to provide a fireplace damper control which is simple in structure, one sturdily constructed, one having long-life characteristics, and one which is economically feasible.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in conjunction with the annexed drawings, in which:

FIGURE 1 is a front elevational view partially in section of a fireplace showing the device of the present invention installed therein;

FIGURE 2 is a side elevational view of the assembly shown in FIGURE 1;

FIGURE 3 is a view taken on the line 3—3 of FIGURE 1;

FIGURE 4 is a view taken on the line 4—4 of FIGURE 3, on an enlarged scale, and with a portion broken away;

FIGURE 5 is a view on an enlarged scale, taken on the line 5—5 of FIGURE 4;

FIGURE 6 is a view taken on the line 6—6 of FIGURE 4;

FIGURE 7 is a modified form of the means for mounting the device of the present invention;

FIGURE 8 is an elevational view similar to FIGURE 2, showing a modified form of the invention, the dotted line showing indicating the hand of a user shifting the device and damper from the closed position to the open position;

FIGURE 9 is a view of the assembly shown in FIGURE 8 in open position; and

FIGURE 10 is a view on an enlarged scale, taken on the line 10—10 of FIGURE 9.

Referring in greater detail to the drawings in which like numerals indicate like parts throughout the several views, the present invention consists in a device or means operatively connected to a flue damper in a fireplace for permitting the damper to shift from an open or an unbridging position to a closed or bridging position with respect to the flue opening of the fireplace.

This device or means is responsive to a drop in temperature in the fireplace from the heat of a fire in the fireplace to room temperature or substantially so.

In FIGURES 1 to 3, the reference numeral 12 designates the masonry portion of a fireplace, not being shown in detail as not being a part of the present invention. The reference numeral 14 designates the flue of the fireplace 12 and the numeral 16 designates a damper mounted in the flue for movement from a position bridging the flue opening or flue to a position unbridging or opening the flue opening or flue. The damper 16 is mounted upon a horizontally disposed shaft 18 having its ends anchored in the sides of the fireplace 12. The damper 16 has a major portion on one side of the shaft 18 so that it is inherently closable by the action of gravity.

The device or means of the present invention comprises

an arm 20 arranged in an upright direction and positioned within the fireplace 12 and having the upper end pivotally connected to a bar 22 fixed to the underside of the damper 16 inwardly of and adjacent one end of the latter.

The invention includes a thermostatic control means within the fireplace 12 and connected to the arm 20 so that the arm will move in the direction to effect the movement of the damper 16 to the bridging position with respect to the flue opening responsive to a drop in temperature within the fireplace 12. This thermostatic control means is designated generally by the reference numeral 24 and consists in a housing 26 on one end of a tubular casing 28 which extends transversely across the fire basket 30 and is formed integrally with the bottom of the latter. The casing 28 supports one end of a rotatable shaft 32 which has its other end extending through the housing 26 and projecting beyond the housing 26.

An expandable and contractible bimetallic strip 34, wound in the form of a helical coil, is operatively connected to the rotatable shaft 32 which constitutes a movable element supportingly engaging the lower end of the arm 20. As shown most clearly in FIGURE 5, one end of the strip 34 is anchored in the shaft 32 and the other end is anchored in the housing 26. The projecting end portion of the shaft 32 carries a pair of arms 36 and 38 having a bolt 40 extending through their free end portions. The bolt 40 and arms 36 and 38 constitute holding and release means which is operable to hold the arm 20 after the damper 16 has been shifted to the unbridging position with respect to the flue opening 14 and during the heating of the fireplace and a rise in temperature of the control means, and which is operable in response to a drop in temperature of the fireplace and a drop in temperature of the control means to release the arm 20 to thereby permit the damper 16 to shift to the bridging position. It is to be noted that the arm 20 is lifted upwardly to open the damper 16, and the lower end of the arm 20 is then positioned to rest on the shaft 32.

A guard member 42 in the form of a hook is carried on the lower end of the arm 20 and forms a guide for the shaft 32. A lifting handle 44 is carried upon the center portion of the arm 20 and forms a means by which the arm 20 and the attached damper 16 may be raised to the open or unbridging position shown in FIGURES 1 and 2. In this position, the lower end portion of the arm 20 rests upon the shaft 32, as shown most clearly in FIGURE 5.

In FIGURES 7 to 10 a modified form of the invention is shown in which a casing 46 is formed separately from a fire basket 48 and is bolted therein, as shown in FIGURE 7. The casing 46 contains a thermostatic element operatively connected to a shaft 50 which has one end exteriorly of the fire basket 48, as shown in FIGURE 10. The projecting end portion of the shaft 50 carries an arm 52 having a pin 54 on its free end arranged in parallel spaced relation with respect to the shaft 50. An arm 56 is arranged in an upright direction and has its upper end pivotally connected to the underside of a damper 58 which is mounted for movement from the full line position shown in FIGURE 8 closing or bridging the flue opening 60 to the dotted line position shown in FIGURE 8 and full line position shown in FIGURE 9, in which the flue opening is unbridged or open. The pin 54 on the arm 52 carried by the shaft 50 constitutes holding and release means which is operable to hold the arm 52 after the damper 58 has been shifted to the unbridging position with respect to the flue opening 60 and during the heating of the fireplace and a rise in temperature of the control means, and which is operable in response to a drop in temperature of the fireplace and a drop in temperature of the control means to release the arm 56 and thereby permit the damper 58 to shift to

the bridging position. It is to be noted that the arm 52 is lifted upwardly to open the damper 58, and the lower end of the arm 52 is then positioned to rest on the shaft 50.

The portion of the arm 56 inwardly of the lower end thereof carries a guard 62 defining an opening in which is movable the shaft 50 responsive to upward and downward movement of the arm 56. A handle 64 is provided on the arm 56 intermediate the upper and lower ends of the latter by means of which the arm 56 and attached damper 58 may be shifted from the closing or bridging position to the unbridging or opening position with respect to the flue opening 60. In FIGURE 8, the hand 66 of a user is shown in dotted lines grasping the handle 64 for effecting such movement. The lower end of the arm 56 is provided with a shoulder 68 which rests upon the shaft 50 when the arm 56 has been shifted to the position in which the damper 58 is open.

For the purposes of simplification, it is presumed that the same bimetallic strip 34 in the housing 26 is also present within the casing 46, although other expandable and retractible thermostatic elements may be employed as desired.

In operation, when the damper 16, 58, has been shifted to the unbridging or opening position with respect to the flue opening 14 or 60 in the fireplace 12 or 12' by the application of a manually applied upwardly lifting force to the handle 44, 64, forward swinging movement of the arm 20, 56, will result in engagement of the lower end portion of the arm 20 on the shaft 32, 50.

When a fire is started within the fireplace 12, 12', the heat of the fire will cause the strip 34 to expand, effecting the rotation of the shaft in such a direction as to swing the arms 36 and 38 as a unit, or the arm 52 to the upward sloping position shown in FIGURE 5 or FIGURE 9, respectively. In this position, the bolt 40 or pin 54 engages the back of the arm 20 or arm 56 and prevents movement of the arm 20 or 56 off of the associated shaft 32 or 50.

Upon cooling of the fireplace, after the fire in the fireplace goes out, the strip 34 will relax or contract and will effect the swinging movement of the associated arms 36, 38, or arm 52 in the direction of the arrows shown in FIGURE 5 and FIGURE 9, respectively. This results in rotation of the associated shaft 32, 50, which causes the lower end portion of the arm 20, 56, to roll off of the shaft resulting in falling of the arm 20 and damper 16 or arm 56 and damper 58 under the sole impetus of gravity and resulting in closing of the respective flue opening.

In each embodiment of the invention, suitable ventilating openings are provided as at 70 and 72 in FIGURES 4 and 5 for the free passage of air through the associated casings 28 or 46 in the housing 26 in order that the thermostatic element responds to temperature changes in the area of the fireplace.

Preferably, the arm 20, 56 is fabricated in two sections permitting the adjustment of the arm 20, 56 for use with fireplaces having their dampers at various heights above the floor of the fireplace.

Also, the firebasket and housing may be formed integrally as in FIGURES 1 to 6, or the housing may be separate and removably secured to the firebasket as in FIGURES 7 to 10.

What is claimed is:

1. The combination with a fireplace having a flue opening, and a damper mounted within said fireplace for movement from a position bridging said opening to an unbridging position with respect to said opening, of a means operatively connected to said damper for shifting said damper from an unbridging position to a bridging position with respect to said flue opening responsive to a drop of temperature in said fireplace, said means comprising an upright arm movable in an upward direction positioned in said fireplace, means pivotally connecting the upper end of said arm to said damper to shift said damper to an unbridging position when said arm is moved upwardly, a thermostatic control means within said fireplace, and a holding and release means operatively connected to said thermostatic control means and to said arm, said holding means being operable to hold said arm in its upward position after said damper has been shifted by said arm to the unbridging position and during the heating of the fireplace and a rise in temperature of said control means and being operable in response to a drop in temperature of the fireplace and a drop in temperature of said control means to release said arm to thereby permit said damper to shift to the bridging position, and hand-actuable means on said arm whereby said damper can be held open during starting of the fire and before said control means is heated.

2. The combination with a fireplace having a flue opening, and a damper mounted within said fireplace for movement from a position bridging said opening to an unbridging position with respect to said opening, of a means operatively connected to said damper for shifting said damper from the unbridging position to the bridging position with respect to said flue opening responsive to a drop in temperature in said fireplace, said means comprising an upright arm movable in an upward direction positioned in said fireplace, means pivotally connecting the upper end of said arm to said damper to shift said damper to an unbridging position when said arm is moved upwardly, a thermostatic control means in said fireplace and connected to said arm so that said arm will fall under the sole impetus of gravity to effect movement of said damper to the bridging position with respect to said flue opening responsive to a drop of temperature in said fireplace, and a holding and release means operatively connected to said thermostatic control means, said holding and release means being operable to hold said arm in its upward position after said damper has been shifted by said arm to the unbridging position and during the heating of the fireplace and a rise in temperature of said control means and being operable in response to a drop in temperature of the fireplace and a drop in temperature of said control means to release said arm to thereby permit said damper to shift to the bridging position, and hand-actuable means on said arm whereby said damper can be held open during starting of the fire and before said control means is heated.

3. The combination according to claim 2 in which said thermostatic control means comprises a movable element, and an expandable and contractible bimetallic strip operatively connected to said element, the lower end of said arm supportingly engaging said element.

4. The combination according to claim 2 in which said thermostatic control means comprises a rotatable shaft, and an expandable and contractible bimetallic strip operatively connected to said shaft, the lower end of said arm supportingly engaging said shaft.

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