Jan. 25, 1944. J. VLADU 2,340,283

FLUE CONTROL DEVICE

Filed Aug. 10, 1940

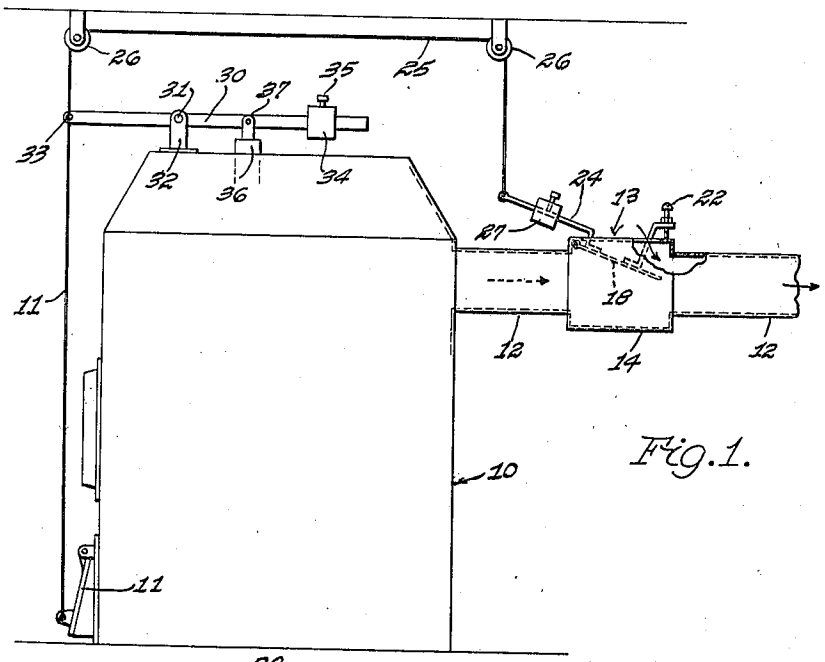


Fig. 1.

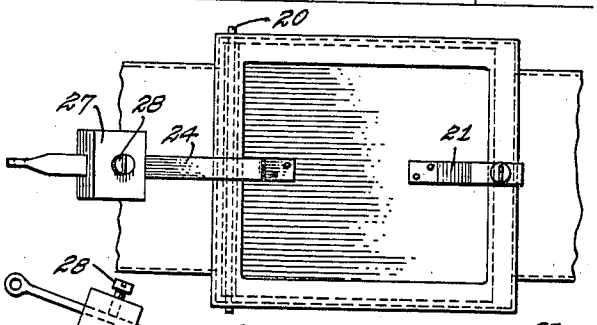


Fig. 2.

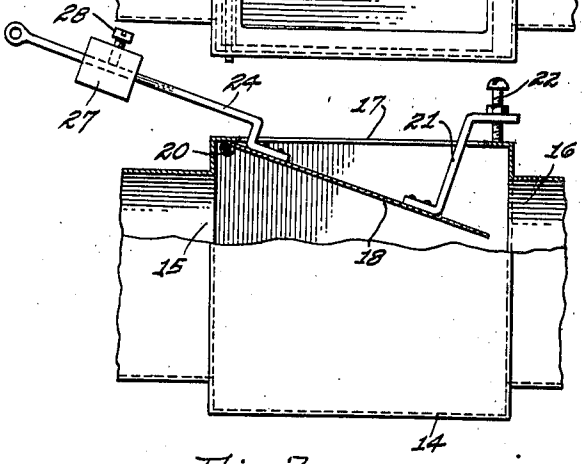


Fig. 3.

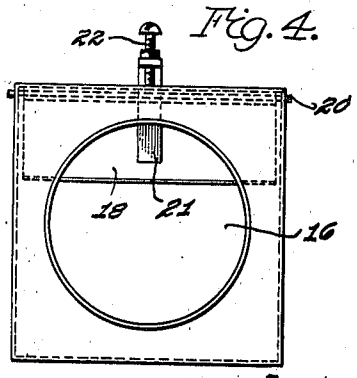


Fig. 4.

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FLUE CONTROL DEVICE

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Application August 10, 1940, Serial No. 352,047

2 Claims. (Cl. 126—293)

This invention relates generally to heating apparatus and more particularly to flue control devices therefor.

It is an object of the present invention to provide for heating apparatuses a new and improved flue control device of a character which will materially reduce loss of heat through the stack or chimney.

Another object of the invention is to provide a new and improved flue control device including a casing having a flow passage therethrough for the products of combustion and having an air intake, the flow passage and air intake being controlled by a single pivoted damper for decreasing the effective flow capacity of the passage and for permitting entrance of air through the air intake.

A further object of the invention is to provide a flue control device of the above mentioned character which is of simple construction, inexpensive to manufacture and readily installed in different types of heating apparatuses.

Other objects of the invention will become apparent from the following detailed description taken in connection with the accompanying drawing in which:

Fig. 1 is an elevational view of a heating apparatus or furnace showing my improved flue control device associated therewith;

Fig. 2 is a top plan view of the control device;

Fig. 3 is a side view of the control device having parts broken away and in section; and

Fig. 4 is an end view of the control device looking from right to left of Fig. 3.

Referring to the drawing by characters of reference, the numeral 10 designates in general a heating apparatus or furnace which may be of any suitable type, the present furnace shown being a hand stoked steam furnace, having the usual draft damper 11. Leading from the furnace 10 there is a flue or conduit 12 for carrying away the products of combustion and located in the flue 12 is my flue control device, designated in general by the numeral 13. The control device 13 includes a casing 14 which is preferably rectangular in shape having an inlet 15 and an outlet 16, respectively, in opposite walls of the casing and connected to pipe sections of the flue 12. In order to decrease efficiently heat loss through the flue 12 the control device casing 14 is provided with an air intake or inlet 17 in the top wall of the casing so that under certain conditions, such as when the draft damper 11 is open, the draft or suction from the chimney causes basement air to be taken into the flue through the air intake 17 thereby decreasing the effective flow capacity of the casing 14 for the passage of the products of combustion.

A damper 18 which is preferably made of sheet metal and rectangular in form is hinged at one edge thereof adjacent the inlet 15 at the top wall 17 by a pin or rod 20 having its opposite ends supported in the side walls of the casing 14. Adjacent the opposite edge of the damper 18 from the pivot rod 20, a bracket 21 is rigidly secured to the damper 18 and carries an adjustable stop member in the form of a screw 22 which is arranged to engage the upper surface of the casing top wall to limit downward swinging movement of the damper 18. In Fig. 3, the damper 18 is shown in its lowered position to which it is limited by the stop screw 22 which may be adjusted, as desired.

One end of an operating arm 24 is rigidly secured to the damper adjacent the pivot rod 20 and the other end of the rod 24 is connected by a suitable cord 25 extending over pulleys 26 to the draft damper 11. Adjustable on and along the rod 24 there is a weight 27 which acts to swing the damper 18 upwardly or counterclockwise, facing Fig. 3, thereby to increase the effective flow capacity of the casing 14 and to decrease or close the air intake 17. The weight 27 may be secured in any desired position along the arm 24 by means of a set screw 28.

Mounted on top of the furnace 10 there is shown the usual type of draft damper operating means which includes a lever 30 pivoted intermediate its ends, as at 31, to a bracket 32 which is rigidly secured to the top of the furnace. One end of the lever 30 is secured to the cord 11, as at 33, and adjacent the other end of the lever there is a weight 34 which may be movably adjustable along the lever and held in any desired position of adjustment by a set screw 35. Intermediate the fulcrum of the lever and the weight 34, a pressure responsive member 36 is pivotally connected to the lever, as at 37, the member 36 being responsive to the steam pressure in the furnace which acts against the weight 34 to close damper 11.

Operation

When the steam pressure in the furnace decreases such that weight 34 becomes effective to pivot lever 30 in a clockwise direction, facing Fig. 1, the draft damper 11 will be opened and the flue damper weight 27 will act to swing the flue damper 18 upwardly or counterclockwise. Thus, as the draft damper 11 is opened to increase

combustion the flue damper 18 is moved to increase the flow capacity of the casing 14 to insure that the products of combustion will be safely carried away through the flue in the chimney. When the steam pressure has reached the desired pressure, the pressure responsive member 36 moves up overcoming the weight 34 and closing the damper 11 and through the cord 25 lifts the flue damper weight 27 and swings the damper 18 downwardly, which movement is limited by the adjustable stop member 22. Thus, when the damper is closed and combustion consequently retarded, damper 18 is moved to its down position to decrease heat loss through the flue 12, the movement of the damper 18 downwardly not only decreasing the effective flow capacity of the casing 14 to passage of gases therethrough from the furnace but also correspondingly increasing the flow capacity of the air intake 17 so that the force of the chimney draft on the flue is correspondingly decreased with resultant saving in escape of heat through the flue 12.

What I claim is:

1. A flue control device for heating apparatus comprising, a casing having an inlet and an outlet for the products of combustion and having a top wall, said top wall having an opening providing a marginal flange, a damper within said casing and hinged to said flange adjacent said first-named inlet, said damper being operable upon pivoting in one direction to increase air flow into said casing through said air inlet and to decrease correspondingly flow of the products of combustion through said casing, and adjustable stop means centrally positioned on the damper engageable with said marginal flange to limit movement of said damper in said one direction, said adjustable stop means being attached to the top of said damper remote from the edges thereof and having a retractible member bearing against the top of said casing when said damper is in open position.

2. A flue control device for heating systems comprising in combination with a furnace having a flue outlet, a rectangular casing adapted to be inserted in the flue outlet, said casing having top, bottom, side and end walls, alined inlet and outlet openings in the end walls, said top wall having a rectangular opening providing a marginal inwardly directed flange extending from the side and end walls, a damper hinged to the under side of the marginal flange adjacent the inlet opening whereby said damper may swing into and out of the path of the products of combustion passing through said casing, a relatively narrow stop strap directly connected to the outer wall of the damper and remote from the edges thereof and a buffer member carried by the free end of the strap adapted to engage the marginal flange to limit inward swinging movement of the damper and prevent complete stoppage of the flue inlet.

JOHN VLADU.