





# UNITED STATES PATENT OFFICE.

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## AUTOMATIC DRAFT-REGULATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 707,789, dated August 26, 1902.

Application filed August 6, 1901. Serial No. 71,047. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES AUGUSTINE MCATEE, a citizen of the United States, and a resident of Mahanoy Plane, county of Schuylkill, and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Draft-Regulating Devices, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters and figures of reference indicate corresponding parts.

This invention relates to an automatic draft-regulating device; and its main object is to provide, in connection with a stove, furnace, or other heating apparatus, means for automatically varying the draft and reducing the flow of air to the zone of combustion and through the flue-outlet after a sufficient period of time has elapsed and the fire is well under way.

To this end my invention consists in combining with any suitable type of heating apparatus a draft-regulating or draft-reducing device operable by the current of heated air or heated products of combustion rising from the fire, this draft-regulating device being placed in the path of such current and being shifted from one position, normally wide open, to another position for reducing the draft when the current of rising air and gases has attained a determined velocity.

In the drawings, Figure 1 is a central vertical section of a portion of a heating apparatus having my improved draft-regulating device applied thereto, which is taken on the line 4 4 of Fig. 3 and shows the device in its open position. Fig. 2 is a similar view showing the device closed. Fig. 3 is a transverse section of the same, the section being taken in line 3 3, Fig. 1. Fig. 4 is a side elevation of the same.

As before stated, my invention may be applied to any suitable type of heating apparatus and at any proper point; but I have shown it here applied to an outlet-pipe or stovepipe leading directly from a heating apparatus, one wall or plate of which is indicated by 2 and has a flue-opening 2' therein. Fitted over this flue-opening so as to have a tight joint is a short section of piping, forming a flue or chamber C, in which my automatic draft-regulating device may be located, this flue having a

suitable outlet-opening 3, leading into an outlet-pipe 4.

The main draft-regulating device may be of any suitable construction; but I prefer to make it in the form of an automatic damper, such as D, having the usual mounting—that is to say, it will be pivoted at 5 or trunnioned in the opposite walls of the chamber C. This damper might be so placed as to be capable of closing the whole flue-opening 2'; but I prefer to leave the usual small draft-space 6 for the purpose of permitting a limited amount of air to flow to the fuel and through the flues and pipes for the purpose of maintaining the fire. All of the remaining area of the opening 2' is controlled, however, by said damper.

For the purpose of operating the damper D, I make use of an element lying directly in the path of the current of air and products of combustion rising from the fire through the flue-opening 2' and the chamber C. It will be evident that this current rises practically in a vertical direction, and hence the operating element may be placed most advantageously crosswise of said current. The operating element shown is placed in this manner and will usually be an oscillatory plate P, it being pivoted at 7 in substantially the same manner as the damper D at the inner side of a draft-opening 8. Said plate P controls the opening 8 in substantially the same way that the damper governs the opening 2', except that the opening 8 may be entirely closed by the plate P. This plate is intended to operate the damper D and is preferably connected therewith by means of a chain 10, which chain may be secured at one end to a rock-arm 12, carried by the plate P. In order to facilitate the operation of actuating the damper D and to close the plate P and said damper with certainty, I may attach to the rock-arm 12 a weight *w*, it being connected thereto in this case by a chain 13 and the parts being so positioned that the moment the current of air and gas rising from the fire attains a certain velocity and the fire is well under way the plate will be raised slightly by the force of such current, whereupon the weight will instantly carry said plate to the position shown in Fig. 2 and at the same time will operate the damper D to close the same. It will be evident that only a slight force will be required to



start the movement of the plate P and that the major portion of the work of shutting off the draft of air will be performed by the weight *w*. This weight is preferably mounted in a small side chamber *c*, which may be formed by a vertical partition 14 and a short transverse partition 15, in which the draft-opening 8 is located. The wall 16 of the side flue or chamber *c* may have an opening 17 therein covered by a door 18, and through this door access may be had to the weight and its chain, said door serving also as a means for starting an auxiliary draft.

When it is desired to restore the damper and other parts of the draft-regulating device to their normal positions, (shown in Fig. 1,) this may be accomplished by shifting the damper in the ordinary manner, said damper having secured to the trunnion 5 thereof outside the chamber C a lever or operating-handle *h*, which may be turned to the position shown in Fig. 4 to reset the draft-regulating device with the damper and the plate in their open positions.

The draft-regulating device described herein constitutes a very simple and effective means for automatically reducing the draft after a fire has been lighted and is well under way and will operate to close the damper automatically at the proper moment. Hence after the fire has been made it requires no further attention, as the regulating device will reduce the draft at the proper time and prevent waste of fuel.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a heating apparatus formed with a damper-casing; of a pivoted damper mounted in said casing and normally in position to allow a free draft, a revoluble shaft, a plate mounted on said shaft, and adapted to be moved by a current passing through the damper-casing, an angular extension on said shaft, a chain and a weight.

attached to said angular extension, and adapted in conjunction with said current to move the said plate, a chain connecting said plate and said damper and enabling them to act simultaneously so that said damper may be closed by the said plate and retained so closed, until restored to normal position by the hand of an operator, and means for affording facility for such operator to return said damper and plate to normal position, all substantially as shown and described.

2. The combination with a heating apparatus, formed with a damper-casing, a revoluble shaft mounted in said casing and formed with an angular extension; a plate mounted on said shaft and arranged so that when in normal position, it will not hinder the free flow of the gaseous matter comprising the products of combustion through the said casing, and so that it may be moved in part by said gaseous matter to shut off the draft, a chain and weight attached to said extension, and in connection with said gaseous matter moving said plate to shut off the draft; of a shaft journaled in the said casing, a damper mounted upon said shaft, and arranged to control the draft from the apparatus, a chain connecting said damper and said plate, and enabling them to work simultaneously and to bring said plate into open, and said damper into closed position, so to remain, until restored to normal position by the hand of an operator; and a handle on said last-named shaft to afford facility for said operator to restore said plate and said damper to normal position; all substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 5th day of July, 1901.

JAMES AUGUSTINE MCATEE.

Witnesses:

PATRICK F. REARDON,  
WILLIAM P. REAGAN.