A. J. MARSCHALL.

DRAFT REGULATOR.

APPLICATION FILED JULY 12, 1912.

1,109,852.

Patented Sept. 8, 1914.

Fig. 1

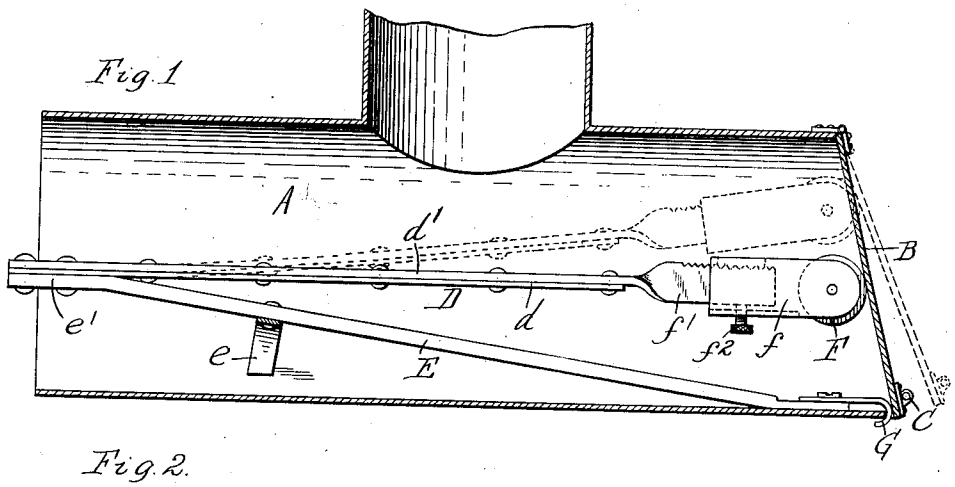


Fig. 2.

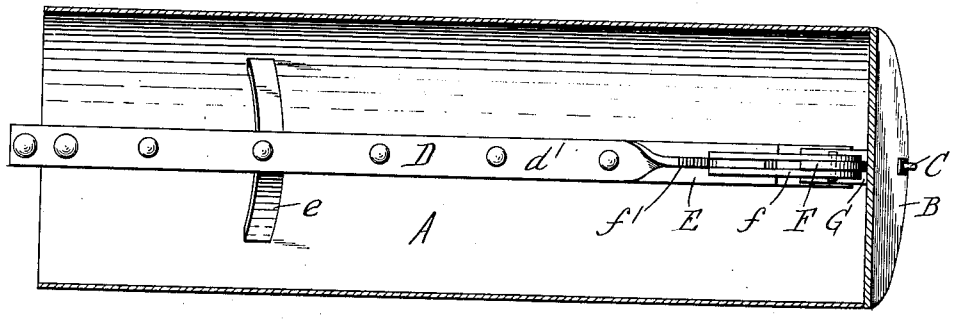


Fig. 3.

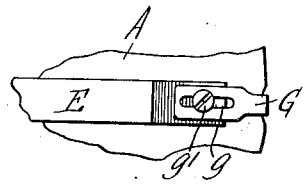
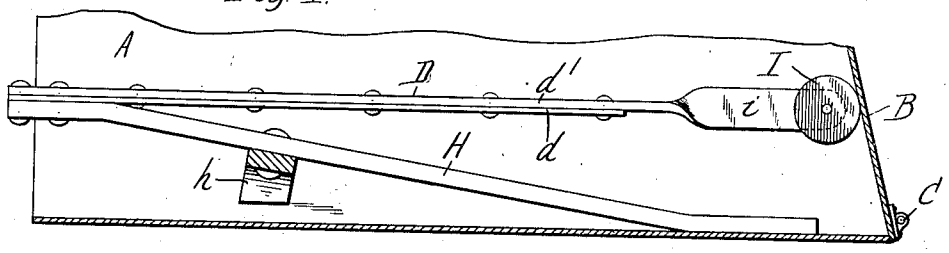


Fig. 4.



Witnesses:-

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UNITED STATES PATENT OFFICE.

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DRAFT-REGULATOR.

1,109,852. Specification of Letters Patent. Patented Sept. 8, 1914.

Application filed July 12, 1912. Serial No. 708,974.

To all whom it may concern:

Be it known that I, ADOLF J. MARSCHALL, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented a new and useful Improvement in Draft-Regulators, of which the following is a specification.

This invention relates to draft regulators and more particularly to that class of draft regulators which are used for automatically controlling check dampers in flue pipes.

The object of this invention is to provide a simple automatic regulator for the flue damper which can be readily placed in operative position in flues of usual construction and which will effectually operate in connection with the ordinary chain and hand flue dampers to regulate the movement of these dampers and can be easily removed from the flue whenever it is desired to clear or repair the same.

In the accompanying drawings: Figure 1 is a sectional elevation of a flue provided with a draft regulator embodying the invention. Fig. 2 is a sectional plan view thereof. Fig. 3 is a fragmentary plan view of the adjustable attachment for the base of the regulator. Fig. 4 is a fragmentary sectional elevation of a flue provided with a regulator of a modified construction.

Like reference characters refer to like parts in the several figures.

A represents a flue pipe of the usual construction employed for conveying the hot gases and smoke from the stove or furnace to the chimney. B the usual hinged check damper which is arranged in and closes the end of the flue and has a handle C or chain or other connection by which it can be operated. All of these parts may be of any suitable construction.

The draft regulator is adapted to be inserted into the damper end of the flue and comprises a thermostatic bar D which is secured at one end to a supporting base E which rests on the bottom wall of the flue, and at its opposite end is adapted to engage the inner face of the damper B.

The thermostatic bar D is composed of two metal strips *d d'* which are formed of materials having different coefficients of expansion so that the two strips will expand unequally under the influence of heat. In the construction shown, the strip *d* is of brass and the strip *d'* of iron as these two metals differ considerably in their coefficients of expansion, but any other suitable expansive materials may be used for this purpose. The strips *d d'* are riveted or otherwise suitably secured together and may be so arranged as to give the thermostatic bar D any predetermined normal position, and in the present construction this bar is shown as being substantially straight. Under the action of heat, the brass strip *d* will expand more rapidly than the iron strip *d'* and this will cause the bar to curve upwardly as shown in dotted lines in Fig. 1.

The base E for the thermostatic bar may be of any suitable construction adapted to be inserted into the flue and to rest on the bottom wall thereof. The base shown in Figs. 1 and 2 comprises an inclined bar which rests at its lower end on the bottom wall of the flue adjacent to the open end thereof, and is provided intermediate of its ends with an arched support *e* which extends transversely of the base with its ends resting upon the bottom wall of the flue at opposite sides thereof. This arched support prevents the base from tipping in the flue and thus holds the regulator upright therein. The upper end of the base E is preferably provided with an attaching portion *e'* to which the thermostatic bar D is riveted or otherwise suitably secured.

Between the free end of the thermostatic bar and the inner face of the damper, an anti-friction roller F is inserted which is adapted to travel over the inner face of the damper under the movements of the thermostatic bar. This roller may be secured to the bar in any suitable manner. In the construction shown in Figs. 1 and 2, the roller F is journaled in one end of a sleeve *f* which fits over an end extension *f'* of the strip *d'* and is adjustably secured thereto by means of a set screw f^2. The roller can thus be adjusted relative to the damper so that the movement of the roller over the inner face of the damper under the action of the thermostatic bar will produce the

necessary regulating movement of the damper. There is no connection between the thermostatic bar and the damper so that the damper is free to move independently of the regulator and can thus be operated at will by hand or in any other manner without interference on the part of the regulator and without disturbing the position of the regulator in the flue.

When the base of the regulator is made of light material, the pressure of the damper on the regulator some times causes the regulator to shift its position in the flue. To prevent this the base of the regulator may be secured to the flue. Any suitable means may be employed for this purpose. In the construction shown in Figs. 1–3, a hook G is provided which is adjustably secured to the lower end of the base by means of a slot *g* and a screw *g'* and is adapted to hook over the end of the flue. This hook holds the regulator from inward movement and permits the base to be adjusted relative to the damper to position the regulator in the flue. This adjustment of the base and the adjustment of the roller on the thermostatic bar makes it possible to regulate with nicety the action of the thermostatic bar on the damper.

In the modified construction shown in Fig. 4, the base H and its support *h* are made of much thicker and heavier material than in the construction above described so that the weight of the base will prevent it from inward movement in the flue under the pressure of the damper. The base is not attached to the flue but simply rests thereon. The roller I is journaled directly on an end extension *i* of the thermostatic bar and is not adjustable relative thereto. This makes a somewhat cheaper construction which is satisfactory for certain classes of regulators.

The regulator is simple and inexpensive in construction and is adapted to be easily inserted into flues as commonly constructed without requiring any change or alteration therein, and when in position in the flue will operate automatically to regulate the position of the damper in accordance with the heat, while at the same time it will not interfere in any way wih the manipulation of the damper by hand or other regulating means.

I claim as my invention:

1. The combination with a flue having an open end, and a hinged damper for said open end, of a thermostatic regulator which is of a construction adapting it to be inserted into and removed from the flue through said open end thereof, said regulator comprising a base which rests loosely on the bottom of the flue and a thermoresponsive member which is attached at one end to said base and has a free end which is caused to move by changes in temperature and is arranged to engage and move said damper, said regulator being disconnected from said flue and said damper whereby it is free to be removed from the flue and the damper can be moved independently of the regulator, said base having lateral portions which bear against the flue to hold the regulator upright therein.

2. The combination with a flue having an open end, and a hinged damper for said open end, of a thermostatic regulator which is of a construction adapting it to be inserted into and removed from the flue through said open end thereof, said regulator comprising a base which rests loosely on the bottom of the flue and a thermoresponsive member which is attached at one end to said base and has a free end which is caused to move by changes in temperature and is arranged to engage and move said damper, said regulator being disconnected from said flue and said damper whereby it is free to be removed from the flue, and the damper can be moved independently of the regulator, said base being provided with a part having a detachable engagement with the flue which prevents movement of said regulator away from said damper.

3. The combination with a flue having an open end, and a hinged damper for said open end, of a thermostatic regulator which is of a construction adapting it to be inserted into and removed from the flue through said open end thereof, said regulator comprising a base which rests loosely on the bottom of the flue and a thermoresponsive member which is attached at one end to said base and has a free end which is caused to move by changes in temperature and is arranged to engage and move said damper, said regulator being disconnected from said flue and said damper whereby it is free to be removed from the flue and the damper can be moved independently of the regulator, said base having a hooked part which engages the end of the flue and prevents movement of said regulator away from said damper.

4. The combination with a flue having an open end, and a hinged damper for said open end, of a thermostatic regulator which is of a construction adapting it to be inserted into and removed from the flue through said open end thereof, said regulator comprising a base which rests loosely on the bottom of the flue and a thermoresponsive member which is attached at one end to said base and has a free end which is caused to move by changes in temperature and is arranged to engage and move said damper, said regulator being disconnected from said flue and said damper whereby it is free to be removed from the flue and the damper

can be moved independently of the regulator, and a part which is adjustably connected to said base and engages the end of the flue for holding said regulator stationary in different adjustments relative to the damper.

Witness my hand, this 8th day of July, 1912.

ADOLF J. MARSCHALL.

Witnesses:
S. H. STUART,
C. R. WEIDNER.