H. H. A. BECKER.

DAMPER MECHANISM.

APPLICATION FILED DEC. 14, 1916.

1,372,333.

Patented Mar. 22, 1921.

Fig. 1

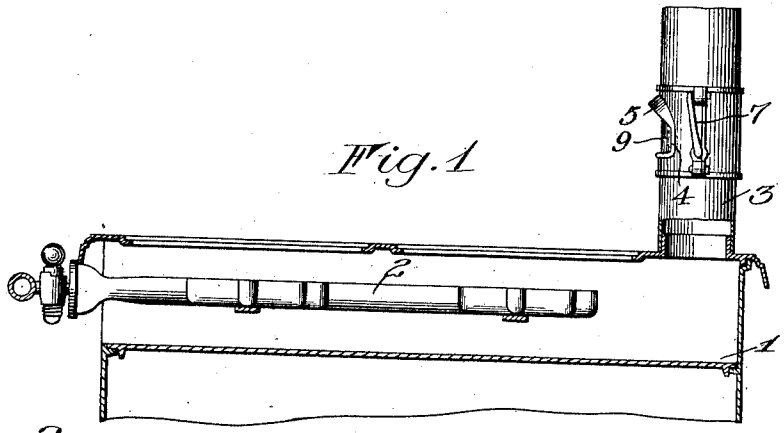


Fig. 2

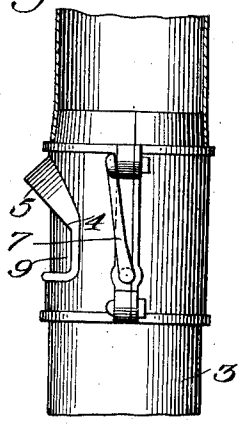


Fig. 3

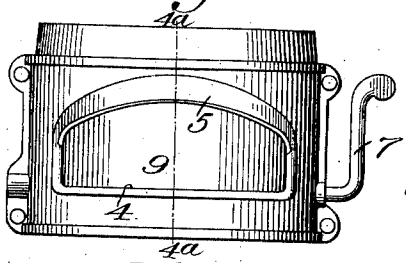


Fig. 4

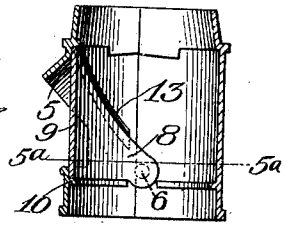


Fig. 5

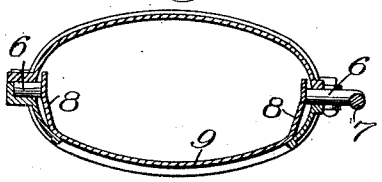


Fig. 7

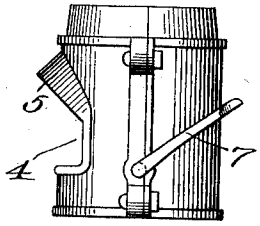
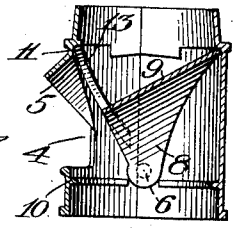


Fig. 8



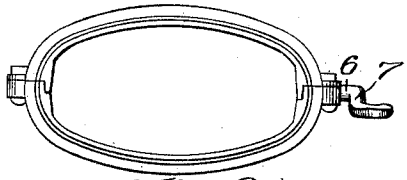


Fig. 6

Witnesses;

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DAMPER MECHANISM.

1,372,333. Specification of Letters Patent. **Patented Mar. 22, 1921.**

Application filed December 14, 1916. Serial No. 136,868.

To all whom it may concern:

Be it known that I, HUGO H. A. BECKER, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Damper Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My invention has for its underlying purpose to afford a damper mechanism for stoves that prevents a back draft from striking a fire, obviating the usual bad effects of a back draft or down draft either upon a coal fire or gaseous fuel fire, at the same time without interfering with the normal up draft and proper combustion. A further object of my invention is to afford a simple structure which can be manufactured at a reasonable cost and can be readily applied to any type of stove. To these and other ends the invention consists in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Figure 1 is a sectional view of a stove equipped with gas burners and showing the main flue in side elevation, with my invention incorporated therein;

Fig. 2 is an enlarged side elevation of my invention, similar to Fig. 1;

Fig. 3 is a front elevation of the damper mechanism;

Fig. 4 is a sectional view on the line 4^a—4^a of Fig. 3;

Fig. 5 is a sectional view on the line 5^a—5^a of Fig. 4;

Fig. 6 is a plan view;

Fig. 7 is a side elevation, with the damper in its rearward position, and

Fig. 8 is a sectional view similar to Fig. 4 with the damper in its rearward position.

Similar reference numerals in the several figures indicate the same parts.

The invention is of general application in connection with stoves, all of which are subject to back or down drafts, and is of particular advantage in connection with gas stoves or combination coal and gas stoves. In this class of stoves, the chief disadvantage lies in the danger of their operation, due to the not infrequent extinguishing of the flame of the gas burners from a sudden back draft, thus permitting an escape of gas into the stove, oven, or room, and often resulting in an explosion or other disastrous result. In the present improvement, I contemplate the elimination of this objection to gas stoves by making it possible to so divert a back draft that the flame cannot be extinguished, although the normal or updraft is at the same time not seriously interfered with. I accomplish this by providing an opening in the flue or chimney that leads to the stove, and arranging a damper in the flue which can be adjusted in such relation to the opening referred to that it will act to deflect any back draft or downward currents of air outwardly through said opening instead of permitting them to continue on downwardly to the fire. The products of combustion are carried upwardly around the damper by the normal updraft so that proper combustion is had at all times.

There are various ways in which this general purpose may be accomplished, and in the structure which I have devised, and disclosed in this application for illustrative purposes, 1 designates the main portion or body of a stove which is provided with a gas burner 2 arranged in a suitable chamber that communicates with the main flue 3. At a point somewhat above the stove, the flue is provided with an opening 4, at the upper edge of which there is a downwardly projecting deflecting portion 5 for a purpose that will appear presently. Arranged within the flue is a damper that is movable, and preferably mounted to swing about a horizontal axis being supported on trunnions 6 and carrying a handle or operating portion 7. The damper includes legs 8 that carry the trunnions 6 and a body portion 9, which serves to entirely close the opening 4 when the damper is in the position shown in Fig. 4. When thus arranged, the lower edge of the body portion engages against a shoulder 10, and the upper edge against a shoulder 11, while the side edges rest against the ribs 13 that are formed at opposite portions of the flue. When the damper is in this forward position, a continuous and uninterrupted passage through the flue is provided that is desirable at times, as for instance when starting a coal fire. Under such conditions, the chimney is cold, and a per-

fect draft is not obtained until the chimney is sufficiently heated so that if the flue opening were not closed, it might permit escape of smoke. After the fire has obtained a good start, or when it is desired to use the gas stove, the damper is opened to the position shown in Fig. 8, in which the upper edge of the body portion engages the back wall of the flue or the portion of the flue opposite to the opening 4, entirely closing the flue at that portion and making it necessary that any currents of air or products of combustion in passing from the lower portion of the flue to the upper go around the lower edge of the body portion of the damper, that is toward the front of the flue. The damper is held in either of its extreme positions by its own weight, and when in its open position, shown in Fig. 8, the body portion serves as a deflector for any downward currents or back draft, which cannot get through at the back of the flue and are forced to the front and outwardly through the opening 4. In this manner, the back draft is prevented from striking the fire, and uninterrupted combustion of gas at the burner is assured. When the damper is in its open position, shown in Fig. 8, the lower edge of the body portion is spaced from the wall of the flue so that the opening 4 is in communication with both the upper and lower parts of the flue. By this means, any upward currents from the fire are carried past the lower edge of the body portion of the damper, or past the front portion of the damper, as shown in Fig. 8, and on upwardly into the upper part of the flue by the normal updraft, and this action is assisted by the deflecting portion 5, which serves to catch any products of combustion or currents of air that might have a tendency to pass through the opening 4, and deflect them back into the upper part of the flue. Under ordinary conditions, the normal draft is sufficient to carry any smoke or products of combustion upwardly into the flue, past the damper at its forward portion, although if any such currents should escape through the opening 4 it would have no serious effect. The primary purpose of the structure is to prevent a back draft from reaching a fire in the stove, and this is accomplished effectively by reason of the fact that the upper portion of the damper engages the back wall of the flue entirely closing the flue at the back, and thus compelling the downward currents to be deflected by the upper side of the body portion toward the opening 4 through which they are carried and discharged.

While the structure is of particular advantage in connection with gas stoves or combination coal and gas stoves, it will be apparent that the damper mechanism may be used with any stove, and in such relation possesses considerable advantage as for instance, in assisting combustion under conditions when back drafts sometimes continue for hours at a time, dependent upon peculiar atmospheric conditions. In using the terms "gas", "gas burner" and "gas stove" throughout this application and claims, I refer to and mean to include any gaseous or liquid fuel, as coming within the purview of my invention.

I claim as my invention:

1. The combination with a stove flue having a lateral opening therein to the atmosphere, of a damper in the flue normally closing said opening but movable inwardly to a position in which it completely closes the back of the flue opposite to the opening but leaves the front of the flue unobstructed to permit the products of combustion from the stove to pass around the forward edge of the damper and past the opening.

2. The combination with a stove flue having a lateral opening therein to the atmosphere, of a damper in the flue normally closing said opening but movable inwardly to an upwardly inclined position in which it completely closes the back of the flue and deflects downward currents through the opening but leaves the front of the flue unobstructed to permit the products of combustion from the stove to pass around the forward edge of the damper and past the opening.

3. The combination with a flue having a lateral opening therein to the atmosphere and a hood extending outwardly at the top of the opening, of a damper in the flue normally closing said opening but movable inwardly to an upwardly inclined position in which it completely closes the back of the flue opposite to the opening and deflects downward currents through the opening but leaves the front of the flue unobstructed to permit the products of combustion from the stove to pass around the forward edge of the damper and past the opening.

4. The combination with a stove flue having a lateral opening therein to the atmosphere, of a damper in the flue normally closing said opening and having a pivot arranged opposite the lower edge of the latter upon which pivot the damper is movable inwardly to a position in which it completely closes the back of the flue opposite to the opening but leaves the front of the flue unobstructed to permit the products of combustion from the stove to pass around the forward edge of the damper and past the opening, the movement of the lower edge of the damper being inwardly of the flue away from the opening.

HUGO H. A. BECKER.