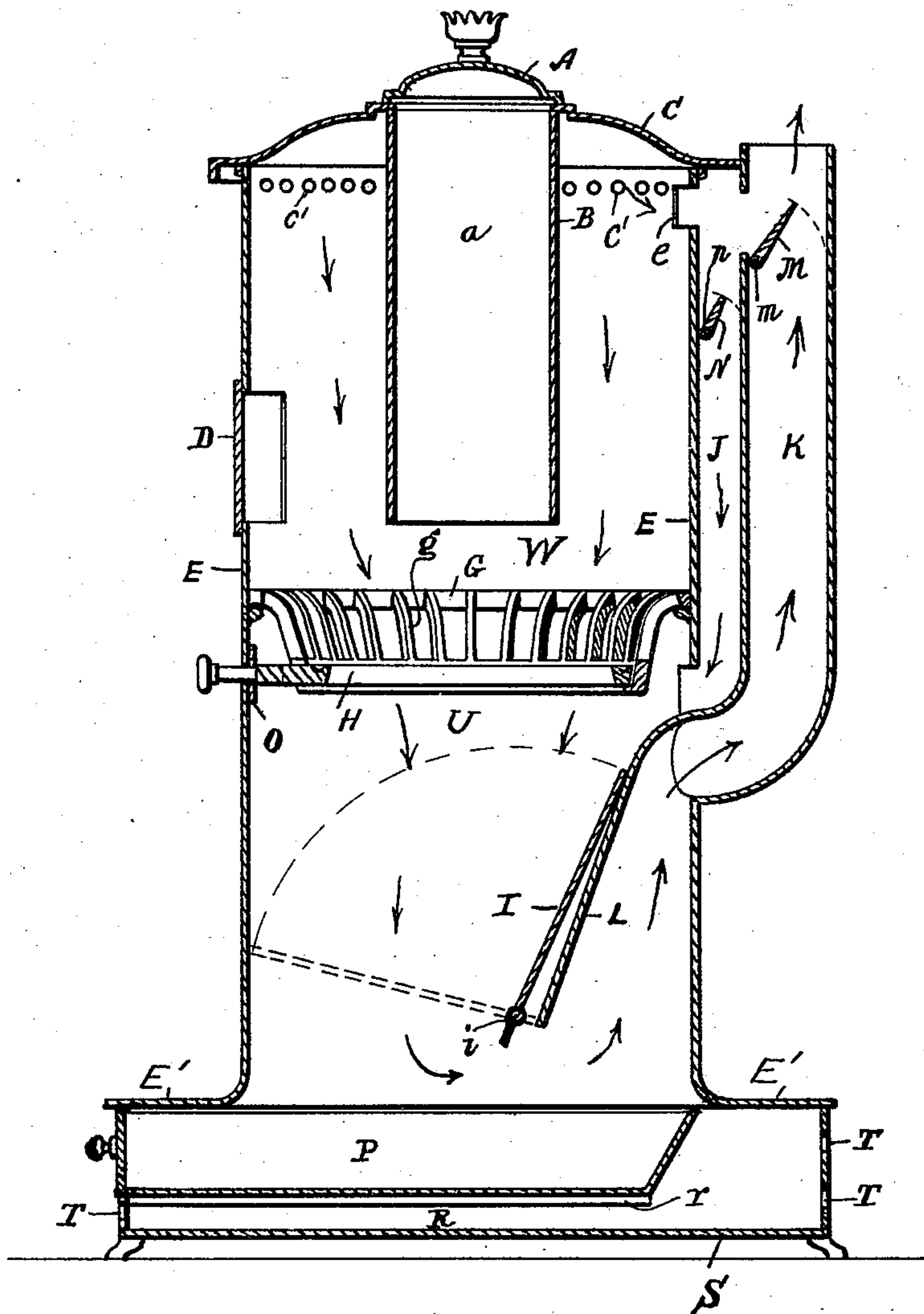


(No Model.)

E. D. McLEAN.
DOWNDRAFT STOVE OR FURNACE.

No. 574,210.

Patented Dec. 29, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

EDWIN DEWHURST McLEAN, OF MARISSA, ILLINOIS.

DOWNDRAFT STOVE OR FURNACE.

SPECIFICATION forming part of Letters Patent No. 574,210, dated December 29, 1896.

Application filed May 21, 1896. Serial No. 592,411. (No model.)

To all whom it may concern:

Be it known that I, EDWIN DEWHURST McLEAN, a citizen of the United States, residing at Marissa, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Downdraft Stoves or Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of stoves or furnaces which have for their object the heating of buildings; and it consists of the combination and arrangement of certain elements whereby a downdraft stove or furnace is provided, in which either anthracite or bituminous coal may be fed, and which is adapted to be used both for direct radiation of heat and as a hot-air furnace, as will be more fully described hereinafter.

Referring to the drawing, the figure represents a vertical sectional view taken centrally.

In the drawing, S designates the base; E E, the outside casing; G H, the grates; V, the combustion-chamber; W, the fire-chamber; a, the magazine; J, the auxiliary downdraft-passage; K, the updraft-passage to flue, and the arrows indicate the direction of the draft.

In constructing my furnace I preferably make the casing of pressed steel, but cast-iron or other metals may suitably be used and the casing may be of a cylindrical or other form. The base S is preferably separable and is provided with short legs. Upon the base are front, back, and side panels having open-work T, upon which rest the flanges E' of the casing. Above the base is an ash-pan P, arranged to slide upon supports r, there being an air-space R between the bottom of pan and base. The basket-grate G, having curbed bars g, is suitably supported about midway between the top and bottom of the casing, and the shaking-grate H is supported at the bottom of the basket-grate. Above the grates, around the fire-chamber, any suitable iron or fire-brick lining for the casing may be used. Centrally

above the grates the magazine a, formed of the walls B, is supported at its upper end by the top C and is provided with a cover A. Near the top of the furnace are perforations C to admit air, but in some cases I may use instead a number of adjustable registers to admit air. At any suitable point, preferably at the front, I provide a door D.

At the outside, preferably at the rear, I provide an updraft-passage K which communicates with the combustion-chamber, and over the opening thereto is an apron-like partition L, extending from above the opening downward in a slanting direction and across the combustion-chamber, terminating near the bottom thereof, where a damper I is hinged on a rod i, which may have at its end outside of the casing any suitable knob or ring for operating the damper. Above the partition L the auxiliary downdraft-passage J enters the combustion-chamber below the grates, the two draft-passages being separated by a partition, at the upper end of which is hung a damper M, operated by a hinge-rod m. The downdraft-passage communicates with the fire-chamber at e, below which is hung a damper N, operated by its hinge-rod n.

The shaking-grate H has a shaker-bar having a reduced portion, around which is fitted a plate O to cover the slot in which the bar works.

Under the various conditions in operation the several dampers may be advantageously opened or closed, as the circumstances may require. The damper I may drop down as indicated by the dotted lines, so that when removing ashes all dust will pass up the flue through the passage K. When operated as a downdraft-heater, the damper N should be open in auxiliary downdraft-passage J, as the object of this auxiliary downdraft-passage is to carry off any smoke or gas that might rise from the coal should the grate become clogged or from any other cause, or when operating as a direct-draft furnace the damper N may close the passage J and damper M close the passage K, permitting a draft from the fire-chamber direct to the flue. The several dampers may also be suitably locked in any intermediate graduating position desired.

By making suitable connections for hot-air

pipes my furnace may be readily adapted for heating by this means.

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

1. A heating stove or furnace consisting of a base, an ash-pan having air-circulating spaces at bottom and around the back and sides thereof, a casing above said base, a basket-grate and shaking-grate supported in said casing, a fire-chamber above and a combustion-chamber below said grates, a magazine above said grates arranged to be filled at the top thereof, a door opening into said fire-chamber, means for admitting air into the upper part of said fire-chamber, and auxiliary downdraft-passage leading from the upper part of said fire-chamber to the upper part of said combustion-chamber, a damper hung in said downdraft-passage arranged to open and close said passage, a partition situated below said downdraft-passage lower opening extending across said combustion-chamber and to near the bottom thereof, a damper hung and arranged to connect the bottom of said partition and divide said combustion-chamber into an upper and a lower compartment, an updraft-passage leading from said lower compartment to the upper part of said furnace, a communicating passage between said auxiliary passage and said updraft-passage near the top thereof, and a damper arranged to either close said communicating passage or said updraft-passage, substantially as and for the purposes shown and described.

2. The combination in a stove or furnace, of a casing, a fire-grate within said casing, a partition located beneath said fire-grate and ex-

tending downward to a point near the bottom of the combustion-chamber, a damper closing the space between said partition and the casing, an updraft-passage provided at the rear of the casing and opening into the combustion-chamber back of said partition, and opening into the flue, an auxiliary downdraft-passage provided contiguous to said updraft-passage, a damper in said auxiliary downdraft-passage, and a damper in said updraft-passage arranged to control either of said passages or the opening between said updraft-passage and said auxiliary downdraft-passage, substantially as and for the purpose shown and described.

3. The combination in a stove or furnace, of a casing, a fire-grate within said casing, a partition located beneath said fire-grate and extending downward to a point near the bottom of the combustion-chamber, a damper closing the space between said partition and the casing, an updraft-passage provided at the rear of the casing and opening into the combustion-chamber back of said partition and opening into the flue, a damper located in said passage, an auxiliary downdraft-passage provided with an opening into the fire-chamber above the grate and an opening into combustion-chamber beneath the grate, and a damper located in said auxiliary passage, substantially as and for the purpose shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN DEWHURST McLEAN.

Witnesses:

WM. CHURCH,
RICHARD OCH.