G. WELLHOUSE.

Coal-Stoves.

No. 155,351. Patented Sept. 22, 1874.

Fig. 3.

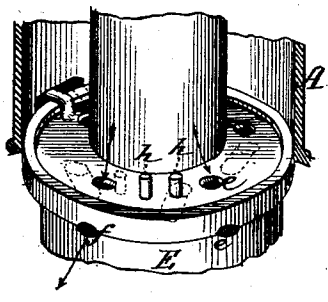


Fig. 1.

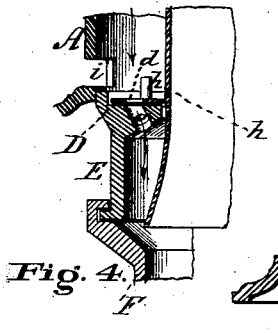
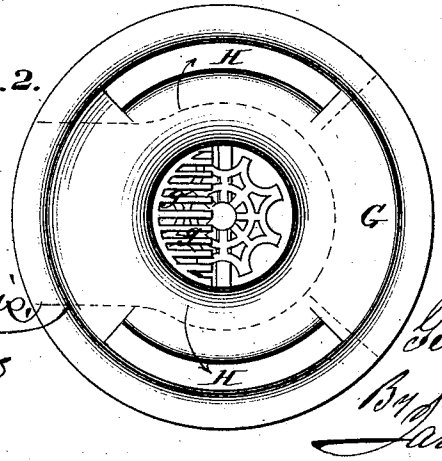


Fig. 4.

Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE WELLHOUSE, OF AKRON, OHIO.

IMPROVEMENT IN COAL-STOVES.

Specification forming part of Letters Patent No. **155,351**, dated September 22, 1874; application filed August 28, 1874.

To all whom it may concern:

Be it known that I, GEORGE WELLHOUSE, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Base-Burning Coal-Stoves, of which the following is a specification:

This invention relates to that class of heating-stoves known as base-burning coal-stoves, such as wherein are employed a magazine or fuel-supplying chamber or reservoir arranged within the upper portion of the casing of the stove, in such a manner that fuel placed in such magazine or supply-chamber will be fed or supplied to a fire-pot arranged below the same, descending into said fire-pot by its inherent gravity as the same is consumed from below.

To improve upon such is the object of my invention, the prime features in view being to overcome or avoid the escape of poisonous gases into the room or apartment where the stove is located; also, to construct the stove or provide it with means for controlling and directing the admission of air, to increase or retard combustion of fuel.

First, the invention consists in surrounding the lower portion of the magazine with a casing, of a diameter greater than that of the magazine, open at its bottom or lower end, and provided with a series of port-holes in its upper portion, which are controlled by a valve, partition, or ring having corresponding ports, the casing and magazine being located in such respect to each other as to form an intermediate space, in such manner that when the ports are open the air entering at the upper portion of the stove is caused to descend down through the ports between the magazine and the casing, uniting the fresh air or oxygen with any gases present, and projecting them united into the fire-chamber, thus burning the smoke and materially aiding combustion.

Second, the invention further consists in providing the casing which surrounds the lower portion of the magazine or fuel-supply chamber with a series of ports, corresponding with those in the movable valve, partition, or plate, in such a manner that, when the respective ports are made to coincide, a continuous draft of air may be caused to enter through the top or upper portion of the stove, and made to descend or traverse between the casing of the magazine and the shell of the stove, in such a manner as to secure a continuous draft, for projecting any floating gases that may be generated into the exit-pipe without aiding combustion, and thus supply the exit-pipe with a draft without taking such draft from the fire.

Third, the invention further consists in providing the fire-pot, upon the inside, at or about its lower edge or base, with horizontal bars or teeth, of a length, preferably, less than half the diameter of the exit portion or bottom of the fire-pot, said bars or teeth being combined with a revolving grate, in such a manner that any clinkers or other foreign matter collecting upon the bars or teeth can be thrust or pushed backward onto the grate, and thence drawn into the ash pit or pan.

In the drawings, Figure 1 is a vertical central section of my improved base-burning stove, illustrating the various improvements, the arrows showing the course of the air, the ports of the valve or ring coinciding with the ports leading into the space between the casing and shell of the stove. Fig. 2 is a longitudinal section taken on the line *x x* of Fig. 1. Fig. 3 is a detached perspective view of a portion of the magazine or fuel-supply chamber, also the valve or ring, illustrating the ports in the casing and valve or ring in coincidence, admitting air direct into the exit-pipe. Fig. 4 is a detached portion of the magazine and casing, illustrating the ports in coincidence, so as to admit air between the casing and magazine entering the fuel.

Similar letters of reference indicate corresponding parts in all the figures.

Referring to the drawings, the letter A designates the outside casing or shell of a stove, the form and construction of which may be varied, said stove, in the present instance, being provided with a movable cover, B, for the admission of fuel into the magazine or fuel-supply chamber or reservoir, the upper portion of the stove being perforated with a series of openings, as at C, to admit of air into the space between the magazine or fuel-supply chamber and the shell of the stove, to be controlled and directed as hereinafter specified. Within the casing A is the magazine or fuel-

supply chamber or reservoir D, having a suitable cover, *a*, and at its top fitted to the interior of the case A above the said series of holes, but so arranged as to be freely rotated on a horizontal plane, and also permit a small quantity of air to continually escape through the joint thus formed into the space between the cover B and the top of the magazine or fuel-supply chamber, which space is connected with the exit-pipe of the stove by a small pipe, C′, so that all gases generated in said space will be conducted into the exit-pipe, as illustrated by the arrow in Fig. 1, and condensation of gases and collection of tar avoided, which are always present when bituminous coal is used as fuel.

Near the bottom of the magazine or fuel-supply chamber is an outward flange, D, provided with a series of vertical ports, *d d*, and accurately fitted into a corresponding groove in the magazine-casing E, so as to move or slide freely therein, making an approximately air-tight joint. On the upper face of casing E are two series of ports, *e e* and *b b*, each corresponding with the ports *d d* in the flange D, so arranged that, by turning the magazine until the ports *d d* correspond with either set of the ports *e e* or *b b*, the air may be directed from above to the inside or outside of the casing E, as desired, and as illustrated and indicated by the arrows in Figs. 1, 2, and 3.

In practice, I have attached the flange D to the magazine or fuel-supply chamber, and thereby supporting the latter; but it may be constructed as a separate valve, partition, or ring, so as to move independent of the magazine or fuel-supply chamber, in which case the magazine may be stationary.

Below the fire ring or section is the fire-pot G, the upper rim of which may at all times form a tight joint from flue to flue, whereby is formed on opposite sides the down-draft flues H H, which latter connect at the back of the stove with the exit-pipe, and are separated from the ash-pit I by a suitable partition, K. These flues conform to the shape of the fire-pot G, and each extends about one-fourth the distance around the stove, and, by their peculiar shape, cause the flame and heat to be directed in a broad sheet against the inside of the case or shell A, thus affording a great heating-surface, while their size prevents them becoming clogged by an accumulation of soot, as is often the case when smaller flues are used. The edges of the fire-pot at the flues are turned downward, as shown, so as to form a continuation of the fire-pot, and, in connection with the partition K and wall of the fire-pot, form an independent air-passage, L, encircling the main portion of the fire-pot, and connected at the front and back of the stove with perforated spaces or openings in the case or shell A. Thus a free circuit of cold air is continually passing around the fire-pot, carrying into the room heated air, and thus preventing the burning out of the fire-pot, as a constant current of cool air is continually impelled against its outer portion. Upon the inside base of the fire-pot are teeth or bars *g g*, projecting upward, as shown, extending about half across the exit-opening, and below the fire-pot is the grate, smaller in diameter than the inside base of the fire-pot, and having a revolving and dumping motion, the construction and arrangement of such being that, as clinkers or other foreign matter are collected upon the bars or teeth, the same can be forced back upon the grate and discharged therefrom into the ash pit or pan.

In operation, air enters through the holes in the upper part of the stove, for instance at C, and, passing downward between the magazine or fuel-supply chamber and case A, as indicated by arrows, carries with it any gases that may escape into that space. By turning the magazine or fuel-supply chamber, with its flange or the valve or partition D, in the proper direction, (for which purpose the pins *h h* are placed thereon, and are reached through a small door in the case A,) the air is caused to pass inside of the casing E, as in Fig. 4, and through the fuel, thereby increasing combustion, or outside, as in Figs. 1 and 3, to retard the same. The grate is readily cleaned, and any clinker forming on the bars or short teeth *g g* can, by means of a common hooked poker, be pushed backward onto the grate, and thence drawn into the ash-pit. Any gases that may accumulate in the chamber between the top of the magazine or fuel-supply chamber and the top B are, with the air that escapes around the top of the magazine, carried through the small pipe C′ into the exit-pipe.

What I claim is—

1. The combination of a movable valve, having a series of ports, with a casing surrounding the magazine of a base-burning stove, said flange or valve intervening between the casing of the stove and the magazine, and seated upon the casing, having two sets of alternately-arranged ports, substantially as herein described, and for the object specified.

2. In a base-burning coal-stove, a magazine-casing provided with sets of ports, *e f*, on its upper face, one set whereof connects with the inside, and the other with the outside, of said casing, in combination with a flange or valve having corresponding ports, for controlling and directing the supply of air to and from the burning fuel.

3. In a base-burning stove, the fire-pot formed with the short teeth or bars *g g*, in combination with a rotating grate, substantially as described.

In testimony that I claim the foregoing, I have hereunto set my hand.

GEORGE WELLHOUSE.

Witnesses:

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