W. P. MILLER.

Stove or Furnace.

No. 221,179. Patented Nov. 4, 1879.

Fig. 4.

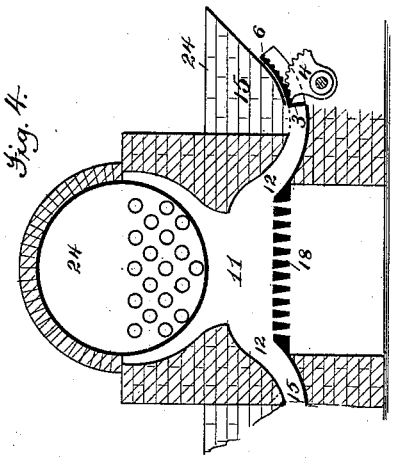


Fig. 3.

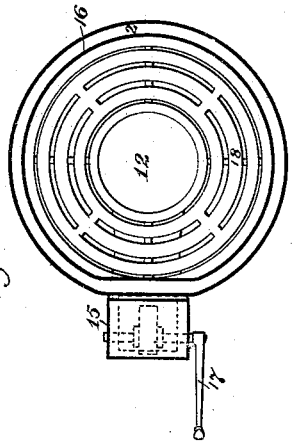


Fig. 2.

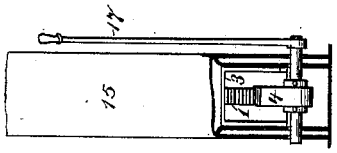
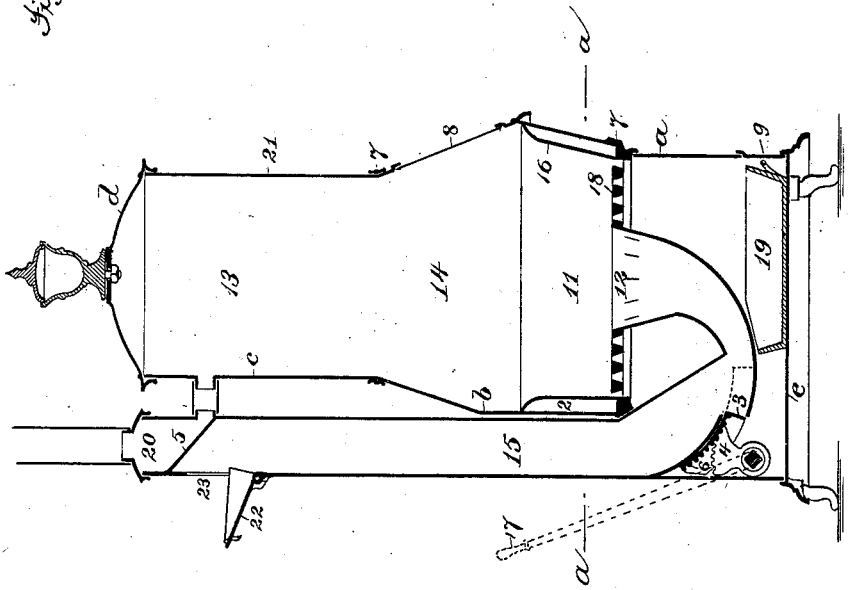


Fig. 1.



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WARREN P. MILLER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN STOVES OR FURNACES.

Specification forming part of Letters Patent No. **221,179**, dated November 4, 1879; application filed September 22, 1879.

To all whom it may concern:

Be it known that I, WARREN P. MILLER, of the city of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Stoves or Furnaces; and I do hereby declare that the following specification, when taken in connection with the accompanying drawings, is such a full, clear, and exact description thereof as will enable others skilled in the art to make and use my improvements.

In said drawings, Figure 1 represents, in sectional elevation, a cylinder-stove provided with my improvements. Fig. 2 represents the fuel-reservoir in sectional elevation, thus exposing a rear view of the feeding-piston and its appliances. Fig. 3 represents a sectional plan view on the section-line *a a* of Fig. 1, and Fig. 4 represents a boiler-furnace that is furnished with my improvements.

This invention consists in providing stoves and furnaces with a fuel-feeding reservoir, whereby the fuel is conducted to the combustion-chamber from beneath the same, the construction of the parts being such as to promote combustion to a high degree, so that the fuel may be consumed without waste.

It also embraces specific combinations and constructions of mechanical parts, all of which is more particularly hereinafter described.

In order to a perfect understanding of my improvements, I will first describe the embodiment of the same in a cylinder-stove, and then explain the application thereof to a furnace.

The shell 21 of the cylinder-stove is constructed, as is common, of sheet or cast iron sections, as the base *a*, lower body, *b*, and upper body, *c*, surmounted by a cap, *d*, and supported by a base-plate, *e*, said parts being united together by suitable rings, as 7. At the front the lower body, *b*, is provided with a sliding or other door, 8, and the base *a* with a similar door, 9, and there will be provided at a proper point such draft-openings, fitted with means for regulating the same, as is common and necessary to properly regulate the combustion of fuel.

Within the body of the stove, and supported there in such manner that it may be rocked or oscillated or rocked by a handle from the outside, is provided a fuel-supporting grate, 18, that is perforated centrally to admit the mouth end 12 of the fuel-reservoir 15, and which is supported so as to remain stationary and admit of the necessary movements of the grate in cleaning the consuming fuel of ashes and causing the same to be deposited in the pan 19, and this grate is surrounded by a fire-pot, 16, so shaped as to provide between it and the walls of the stove-body an air-chamber, 2.

The fuel-reservoir stands vertically outside of the stove, and parallel, or nearly so, with the axis of its body, and is curved so as to extend through the base *a* and terminate at the upper surface of the grate 18. It is furnished, at a proper point, with a feeding-opening, that is provided with a closing-door, that shown being a dropping door, so constructed as to operate as a coal-scuttle rest and conducting-trough. At a suitable point, preferably near the lowest point of its curvature, this fuel-reservoir is provided with a feeding-piston, 3, adapted to reciprocate within said reservoir, it being furnished with an actuating handle or lever. As shown, this piston 3 is curved in form and adapted to move in the arc of a circle through an opening in the reservoir, it thus being capable of traversing a considerable distance in the said reservoir. One means of actuating it is found in a rocking segment, 4, that is mounted upon a rock-shaft controlled by a lever, 17, and engaging a rack, 6, formed on or affixed to the under side of the said piston. Other means of moving this piston will readily suggest themselves, and may be employed to cause it to traverse a portion of the fuel-reservoir. This fuel-reservoir, though shown as aligned with or a continuation of the stove-body and continued upward and provided with a partition, 5, to form the conducting-pipe 20 for the products of combustion, may, of course, be a separate device, and be shaped and disposed as fancy may dictate or necessity require.

In operation, the fuel-reservoir 15 is first filled through the opening 23 with proper-sized coal, which, by moving the feeding-piston 3 back and forth, is forced forward and upward until said reservoir is filled to its mouth end 12; then place within the fire-pot 16, over the grate 18 and coal in the mouth of the reservoir, a bed of light kindlings and wood, and

cover the same with three or four inches of coal, all of which may be introduced through the door 8. Upon lighting the wood and arranging the dampers the wood and superposed coal will readily become ignited, and the heat induced thereby will be imparted for a considerable depth to the coal in the mouth end of the reservoir, and to such a degree as to cause the same to emit gases, which will be consumed by the fire, so that the coal will readily be converted into coke, and a live mass of burning coal will be spread over the grate and mouth of the reservoir. By again operating the feeding-piston so much fresh coal as is necessary will be moved upward and force the burning coke radially over the grate and toward the walls of the fire-pot 16, the fresh coal overlying the same, and, in turn, being converted into burning coke.

The air necessary to promote combustion passes from beneath up through the grate 18 and burning coke, and the products of combustion pass upward into the smoke-chamber 13, and thence out through the pipe 20 to the chimney, while the heat generated in the air-chamber 2 and throughout the stove is radiated, as is common in stoves of like character.

By the use of my improvement the combustion-chamber can be made and maintained air-tight in a stove used for heating purposes, so that a slow consumption of burning coke can be effected and its greatest heating power utilized.

All the gases liberated from the fresh coal are made to pass into the burning coals, where they are consumed and thus utilized, whereby a great economy of fuel is accomplished. This method of feeding avoids the necessity of doors and covers located above the combustion-chamber, as in ordinary base-burners.

In Fig. 4 is illustrated the application of my improvement to a boiler-furnace.

The boiler 24 and its housing are of common construction, and the grate 18, combustion-chamber 11, the draft arrangements and conduit for the products of combustion are likewise of the ordinary character.

At one or more points, preferably at opposite sides, as shown, the combustion-chamber is provided with a fuel-reservoir, as 15, the mouth end 12 of which terminates at the grate 18, so that its contents may be directed thereon. This reservoir is properly shaped, so as to be provided with a moving feeding-piston that is capable of being reciprocated in said reservoir, and operate to force coal over and onto the grate 18 or burning coke thereon, said feeding-piston being constructed and actuated as is that shown in the other figures, as its letters of reference indicate, or constructed as before explained in any other simple manner. In this instance the fuel-reservoir has an open end, 24, which might, of course, be provided with a closing-door. The reservoir having been filled with coal, and the feeding-piston operated until the coal reaches the mouth end of the reservoir, the fire may be started upon the grate in the usual way, and be regularly fed by operating the piston, the coal fed by which will be forced upon the top of the burning coke, and consumed, as before described.

What I claim is—

1. A stove provided with a fuel-reservoir extending from below the grate through and to the upper plane of the same, substantially as shown and described.

2. The combination, with the grate 18 of a stove or furnace, of the fuel-reservoir 15, extending downwardly from said grate, and terminating outside of the stove-body or furnace-housing, substantially as described.

3. The combination, with the grate 18 of a stove or furnace, of a fuel-reservoir, 15, terminating at the surface of said grate extending outside of the stove-body or furnace-housing, and provided with a feeding piston having devices for imparting motion thereto, substantially as described.

4. The combination, with the fuel-reservoir 15, of the piston 3, its rack 6, rocking segment 4, and a suitable actuating-lever, as 17, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WARREN P. MILLER.

Witnesses:
H. T. MUNSON,
GEO. H. GRAHAM.