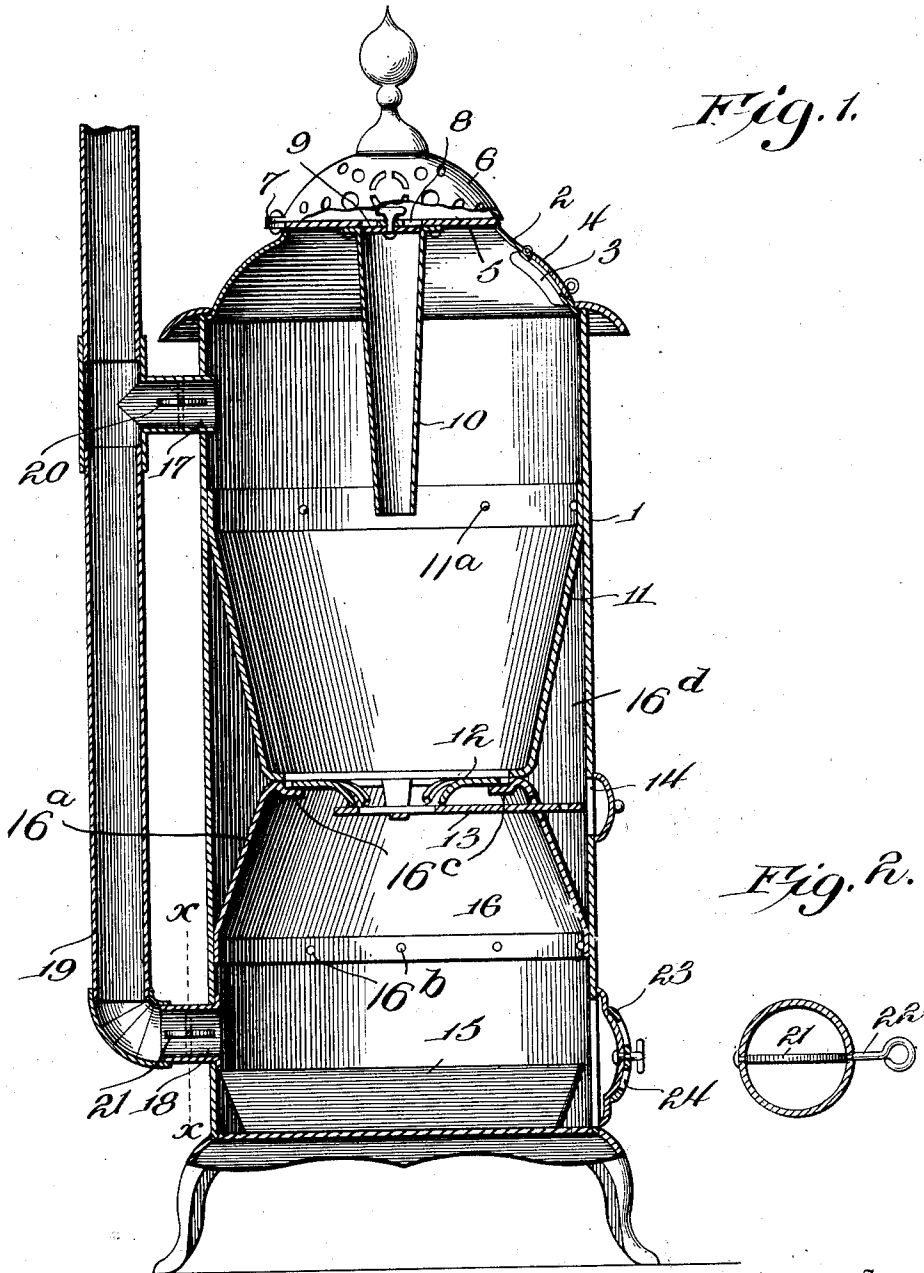


No. 839,804.

PATENTED JAN. 1, 1907.

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STOVE.

APPLICATION FILED MAY 16, 1905.



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# UNITED STATES PATENT OFFICE.

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## STOVE.

No. 839,804.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed May 16, 1905. Serial No. 260,700.

### *To all whom it may concern:*

Be it known that I, CHARLES AYRES, a citizen of the United States, residing at Van Buren, in the county of Crawford and State of Arkansas, have invented certain new and useful Improvements in Stoves; and I do hereby 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.

My invention relates to improvements in heating-stoves; and its object is to provide a stove of this character having a novel arrangement of air inlets and outlets whereby air can be directed either downward or upward through the grate or can be caused to circulate above said grate without passing therethrough.

Another object is to provide a stove which will consume all noxious gases and prevent their escape into the surrounding atmosphere.

A still further object is to provide a heating-stove which will consume all kinds of coal, as well as slack, and which serves as a floor-warmer.

With the above and other objects in view the invention consists of a casing having a grate therein disposed at a distance above the bottom thereof, and extending into the stove from the top is an air-inlet tube. Outlets are located within the casing at points above and below the grate, and both outlets are connected to a common smoke-pipe and have dampers whereby either or both may be opened or closed at will.

The invention also consists in further novel construction and combination of parts hereinafter more fully described and claimed.

In the accompanying drawings I have shown the preferred form of my invention.

In said drawings, Figure 1 is a vertical section through my improved heating-stove; and Fig. 2 is a section on line *x x*, Fig. 1.

Referring to the figures by numerals of reference; 1 is a casing of any suitable contour and having a substantially frusto-conical top 2, provided with a fuel-inlet opening 3, having a closure 4. The flat portion 5 of the top is normally covered by a cap 6, which may be suitably ornamented and which is pivoted to the top 2, as at 7, so as to be readily swung to either side to permit of easy access to the portion 5. An air-inlet opening 8 is centrally located in the flat portion 5 of the stove-top and is normally closed by means of a damper

9, which may be either of the rotary or sliding type. An air-inlet tube 10 extends downward from the opening 8 to a point within the upper portion of the fire-pot 11. A suitable grate 12 is disposed at the bottom of the fire-pot and has a movable portion 13, to which access may be had through a door 14 within the casing 1.

An ash-pan 15 of any preferred form is adapted to be located upon the bottom of the stove-casing and below the grate, and the lower compartment 16 of the stove, in which this pan is located, is of considerable size, so that air is free to circulate therethrough either downward or upward, according to the arrangement of the dampers hereinafter referred to. The fire-pot 11 is substantially cup-shaped and narrower at its lower end than at its upper end, the upper end being of such a diameter as to snugly fit within the casing 1 and is secured thereto in any preferred manner, as by rivets 11<sup>a</sup>, and the compartment 16 is formed by disposing an inverted-cup-shaped cone 16<sup>a</sup> below the fire-pot 11, the upper end of the cone-shaped member 16<sup>a</sup> being smaller than the lower end thereof and coincides with the diameter of the lower end of the fire-pot 11 and is adapted to abut thereagainst, while the extreme lower end of the cone-shaped member 16<sup>a</sup> is secured to the casing 1 in any preferred manner, as by rivets 16<sup>b</sup>. The upper or reduced end of the member 16<sup>a</sup> is provided with inwardly-directed lips 16<sup>c</sup>, upon which is seated the grate 12, said lips forming a support for the grate. By having the lower and upper ends, respectively, of the fire-pot 11 and cone-shaped member 16<sup>a</sup> tapered, a chamber 16<sup>d</sup> is formed around the fire-pot and cone-shaped member, the object of which is to protect the casing 1 from coming in direct contact with the end of the fire-pot containing the combustible material, and as the combustion takes place in the lower end of the fire-pot 11 this result is accomplished by reducing the lower end of the fire-pot and the upper end of the member 16<sup>a</sup>, thereby forming the chamber 16<sup>d</sup>. It will also be seen that the chamber 16<sup>d</sup> is entirely cut off from the upper and lower ends of the stove, so that the same will not be affected by the draft circulating through the fire-pot or compartment 16, thereby forming a dead-space around the fire-pot and the upper end of the lower compartment 16.

If the heat should become so intense as to

overheat the casing 1, surrounding the fire-pot, the door 14 may be removed, thereby admitting cold air into the chamber 16<sup>d</sup>, and thus reducing the temperature in the chamber.

Outlet-openings 17 and 18 are formed within the stove-casing at points near the top and bottom thereof, respectively, and these openings communicate with the smoke-pipe 19 of the stove. Dampers 20 and 21 are located in the openings 17 and 18, respectively, and have arms 22 extending therefrom, whereby they may be readily manipulated manually. A door 23 is located in the casing 1, near the bottom thereof, to permit the removal of the pan 15. This door has a damper 24 for regulating the admission of air therethrough.

By closing the dampers 9 and 21 and opening dampers 20 and 24 air will circulate from the door 23 upward through the grate 12 and out through openings 17, as in the ordinary construction of stoves of this character. More or less of the gas generated will, however, escape into the surrounding atmosphere, and to overcome this objectionable result I preferably produce a downdraft by closing the dampers 20 and 24 and opening dampers 9 and 21. Air will then enter through the opening 8 and tube 10 and pass downward through the fuel and the grate and then into the lower compartment 16 and out through the opening 18. Any gases generated within the upper portion of the stove will therefore be carried downward into the fuel and consumed and there is no danger of their escape from the stove. If preferred, the two lower dampers 21 and 24 may be closed, and air entering the tube 10 will then pass outward through the opening 17 and will contact only with the upper portion of the fuel in the stove. The fuel will therefore be caused to burn very slowly, and a great saving will therefore result. When the downdraft is employed, the hot products of combustion will naturally heat the walls of the chamber 16 to a very high temperature, and therefore the stove is particularly adapted for use as a floor-warmer.

In the foregoing description I have shown

the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

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

1. In a stove, the combination with a casing, of a cup-shaped fire-pot within said casing, the walls of which are tapered, means to secure said fire-pot to the casing, a cone-shaped member below said fire-pot, the lower end thereof being secured to the casing, a plurality of lips at the upper end of said member, a grate seated upon said lips, said fire-pot and cone-shaped member forming a chamber within the casing, means for controlling the admission of air to the chamber, an air-inlet tube extending into the casing above the grate, outlets within the casing above and below the grate, a smoke-pipe extending from the outlets and means within the outlets for directing air from the tube either directly to the smoke-pipe or through the grate to said pipe.

2. In a stove, the combination with a casing, of a tapered fire-pot, means to secure the upper end of the fire-pot to the casing, a cone-shaped member below the fire-pot and adapted to abut thereagainst, means to secure the lower end of said cone-shaped member to the casing, whereby a chamber will be formed around the fire-pot and cone-shaped member and separated from the remainder of the stove, inwardly-directed lips at the upper end of said cone-shaped member, a grate disposed on said lips and means to control the admission of air into the chamber surrounding the fire-pot and cone-shaped member.

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

CHARLES AYRES.

Witnesses:

GEO. H. McATER,  
P. B. COMEY.