A. TRAVER.

Heating Stove.

No. 108,212. Patented Oct. 11, 1870.

Fig. 1.

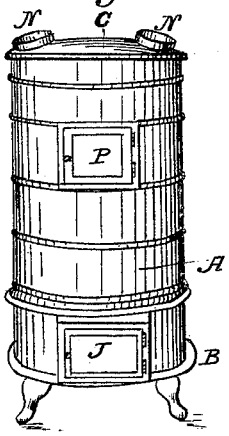


Fig. 2.

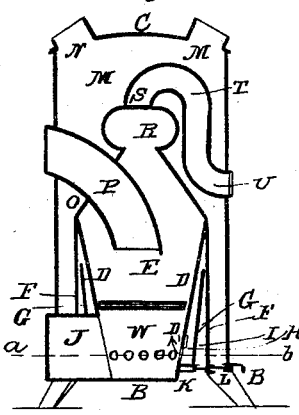


Fig. 3.

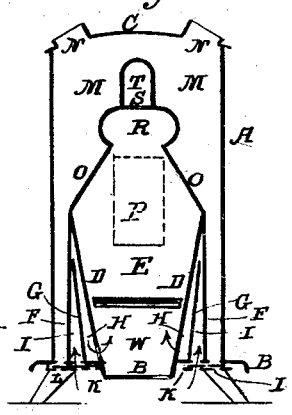


Fig. 5.

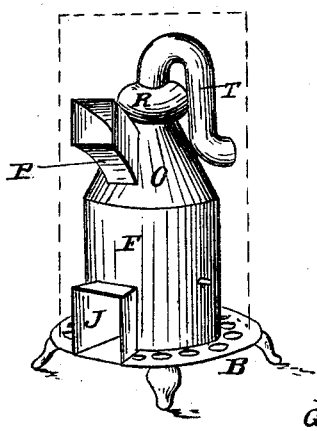


Fig. 4.

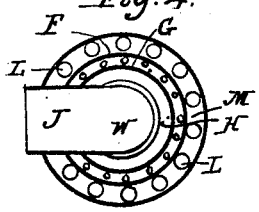


Fig. 8.

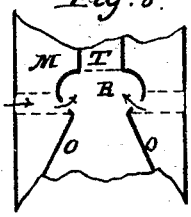


Fig. 6.

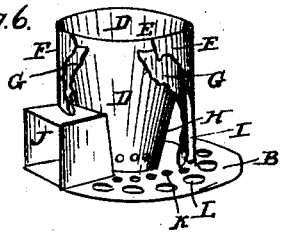
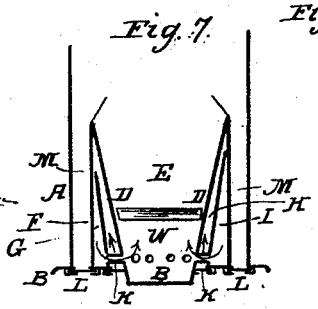


Fig. 7.



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Inventor:

Alvah Traver

UNITED STATES PATENT OFFICE.

ALVAH TRAVER, OF TROY, NEW YORK.

IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. **108,212**, dated October 11, 1870.

I, ALVAH TRAVER, of the city of Troy, county of Rensselaer and State of New York, have invented certain Improvements in Heating-Stoves, Furnace-Heaters, &c., of which the following is a specifiation:

The nature of my invention consists, first, in the arrangement of chambers, surrounding wholly or partly the fire-pot of a heating-stove, furnace-heater, or the fire-pot or chamber of combustion of any kind of stove, heater, range, &c., to which this arrangement or construction may be adapted and beneficial, the said chambers having a proper communication with each other, as will be hereinafter described, and also apertures for the ingress of air thereto, and also for its egress, where proper, and as will be more fully described hereinafter, the object of these chambers being to provide a place wherein air may be highly heated, and afterward employed as draft-air to the fire, so as to cause and keep up combustion within the fire-pot or chamber therefor. Except when kindling or starting the fire, the air for draft is admitted through the above-mentioned chambers, and in no other way. I also provide, in connection therewith, suitable dampers, or the equivalent thereof, for regulating and controlling the current and the amount of air admitted, the air being admitted through apertures in the bottom plate of the stove, heater, or range, &c. It also consists in the construction of a double annular casing surrounding a fire-pot, and adjacent thereto, to form the above-mentioned chambers.

Secondly, my invention consists in the construction of a stove or furnace-heater, wherein the fire-pot and the part below the upper edge of the fire-pot, is conical, tapering downward, and the same being covered, and in combination with a cone cover tapering upward, and having an outlet at the top for exit of smoke and waste of combustion, gases, &c., into a gas-consuming chamber located immediately above said upper cone; and my invention also consists in the construction and application of a gas-consuming chamber, formed and situated above the chamber of combustion in a stove or heater, and between said chamber of combustion and exit-passage, flue, or stove-pipe, so that the escaping products of combustion must pass through said chamber in escaping. It also consists in perforated cover to gas-consuming chamber, to prevent soot or cinders escaping into the exit-pipe, and for retarding and aiding combustion of gases. It also consists in an open annular chamber within outer walls of stove, wherein atmospheric air is brought in direct contact with the entire surface of fire-pot, combustion-chamber, gas-consuming chamber, and intensely heated before its escape, as herein described and set forth. It also consists of the double set of apertures or openings through bottom plate of stove, to admit atmospheric air for heated draft-air, and also for heating atmospheric air in chamber by peculiar devices herein set forth. It also consists of a feed cylinder or magazine, arranged and operating in and through side outer walls of stove, and supported and held in place by cone combustion cover of the fire-pot. By the first part of my invention, viz., the chambers for heating the draft-air, a supply of heated air is furnished as draft to the fire, raising the temperature within the fire-chamber, increasing the heating properties of the stove, and greatly economizing in the use of fuel; and a great point is gained in the concentrating of the gases and products of combustion by means of the cone cover to the fire-chamber, by retarding the heat and keeping it longer within said chamber, and, again, in holding the gases where the heat is most intense, so as to cause their combustion, and, also, by their assistance, increase the heating properties of the stove or heater.

Description of the Accompanying Drawing.

Figure 1 is a perspective of a heating-furnace or stove. Fig. 2 is a vertical section of the same stove or heater, from front to rear. Fig. 3 is a vertical section of the same stove or heater crosswise. Fig. 4 is a horizontal section on the line A B, Fig. 2. Fig. 5 is a perspective of the stove or heater proper, without the exterior casing. Fig. 6 is a perspective of the lower cone, separate from the other parts of the stove or heater. Fig. 7 is a vertical section of the lower part of the stove, to show a different way of taking in the air, the chambers being the reverse of those in Fig. 3. Fig. 8 is a vertical section through the chamber situated at the top of the cone-formed

chamber of combustion, and between it and the exit-pipe, which chamber forms the place for the combustion of the gases, and this view is for the purpose of showing how fresh oxygen or air may be admitted to assist in the destruction of the gases evolved by the burning fuel. Arrows show the direction of the currents.

Like letters refer to like or corresponding parts.

General Description.

A is the outer casing, resting on the bottom plate B, and said casing forms a cylinder, within which the air is heated to warm a room or rooms above, or the room within which the stove or heater is placed. C is the top of the cylinder, and covering the chamber within. D is the lower cone, forming the fire-pot or chamber of combustion E, and F is the outer casing surrounding the fire-pot E, and extending downward to the bottom B of the stove or heater. G is another casing, also surrounding the fire-pot E, and reaching upward from the bottom plate B. The fire-pot cone D and the outer casing F form a junction at the upper edge of each, so that a chamber or chambers are inclosed thereby and covered, and the inner casing G is intermediate between the casing F and the fire-pot cone D, so that, by this construction, two chambers are formed, surrounding wholly or partly the fire-pot E. The chamber next the fire-pot is marked H, and the outer one is marked I. The ash-pit is also formed by the cone D, and is provided with a means of access at J. At K are shown apertures in and through the bottom plate B, and provided with dampers, or not, as required, and through these apertures air is admitted to the chamber I, and, passing upward within said chamber, is heated. The casing G may not reach to the top of the cone D and outer casing F, so that the air may pass over the top thereof, or it may reach up to that point and have suitable apertures, through which the air may pass to the chamber H, and then the air passes downward through the chambers H, and through suitable apertures, tubes, or the equivalent thereof, is admitted to the ash-pit W, and thence to the fire, and in this way highly-heated atmospheric air is admitted to the fire, and in no other way is the fire fed, except when starting, and then it is fed through the entrance to the ash-pit W. Air so admitted is, of course, cold, and is only used when commencing a fire. At L are shown apertures, also controlled by dampers, through which the air is admitted through the bottom plate B into the heating-chamber M where it is heated, and rising therein passes off out through the top at N, or through registers or pipes, as required. At O is shown the upper cone, its lower edge resting upon the upper edge of the lower cone D, and joined thereto. This cone and its connections forms the top over the fire-pot E and chamber of combustion, and incloses the fire, &c., from the heating-chamber M. At P is shown a self-feed cylinder or magazine. It may be round or square, or any suitable form, and it passes through outer casing A and the cone O, connected properly thereto. At R is shown a cupola or globular-shaped chamber, which rests upon the upper edge of the cone O, and forms an extension thereof. The products of combustion are concentrated strongly within the cone as they pass upward, rendering combustion strong at their entrance to this chamber, and here they expand and circulate before escaping, and they are again concentrated before passing off into the exit-pipe T. At the mouth of the exit-pipe S I have a grating or sieve, or perforated plate, through which they must pass before entering said exit-pipe T, so that all the products of combustion which are useful for heat are by this means of concentration and expansion and circulation within a highly-heated chamber, become destroyed. Fresh supply of oxygen may be had at this point from orifices around said chamber R, leading from a suitable supply-chamber, if necessary, and if found beneficial, or through orifices made in and through the walls of combustion-chamber R, and the supply of oxygen admitted from the chamber M, or through tubes running through the outer walls of the stove communicating with said orifices. Said orifices or tubes for the supply of oxygen may be opened, or said tubes enter at any point in the outer surface of walls of the combustion-chamber R, as shown in Fig. 8, where air is admitted from the chamber M to the interior of the chamber R, and dotted lines are shown to represent the course of tubes, when it is the intention of bringing air from outside the chamber M, and through the same to and into the chamber R. At T is shown the exit or escape pipe, which may be curved or bent in any suitable form, and at U is shown a damper to regulate the velocity of the escape of the used-up products of combustion.

By means of the chamber M the air, after being admitted through apertures L, circulates freely around and upward against and in contact with the hottest surface of the stove, and is continually being heated in its passage around the fire-pot, combustion-chamber E, and gas-consuming chamber R, exterior exit-pipe T, thus exposing greater and more intensely-heating surface to confined air than in ordinary heaters or stoves.

When my stove is in use simply for heating purposes in a room within which it is placed, the top plate C may be removed, if desired, so that heated air from surface of heating-chamber may freely escape into the room; or a fancy grating or open-work cover may be used instead.

The chambers H and I may be reversed, as shown in Fig. 7—that is to say, the air may enter the chamber marked H, situated next the fire-pot E, and, in passing upward therein, become heated by contact with the cone D,

and then passing over the intermediate wall G descends through the chamber I to the bottom thereof by a suitable arrangement of apertures, tubes, or the equivalent thereof, about as shown in Fig. 7, pass into the ash-pit W, and so to the fire. In this case the inlet-apertures K would be situated at the bottom of the chamber H, and that become the first heating-chamber.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The double annular inner casing F G within the walls of the stove or heater, and below the top of the fire-pot, and joined or adjacent or near thereto, constructed and arranged for the purpose as herein described and set forth.

2. The interior chambers H and I, formed by said double annular casings, arranged and operating in the manner and for the purpose substantially as described and set forth.

3. An annular surrounding chamber formed entirely around the fire-pot E, combustion cover O, gas-consuming chamber R, and interior exit-pipe T, arranged and operating substantially as described and set forth.

4. Openings K, dampered or not, in the bottom plate of a stove, arranged and operating for receiving atmospheric air into the chambers H and I, for the purpose as herein described and set forth.

5. The fire-pot E, smoke and combustion-chamber, formed by the cone O, gas-consuming chamber or cupola R with interior exit-pipe T, all in combination and operation, substantially as herein described and set forth.

6. The cupola-shaped dome R, or its equivalent, and perforated cover S, operating substantially in the manner and for the purpose described and set forth.

7. Smoke and combustion chamber, formed by the cone O, gas-consuming chamber or cupola R, with interior exit-pipe T, and chute or coal-feed P, all in combination and operation, substantially as described and set forth.

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Witnesses:

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