G. E. ARNDT.

STOVE.

APPLICATION FILED NOV. 11, 1912.

1,127,575.

Patented Feb. 9, 1915.

2 SHEETS—SHEET 1.

Fig. 2.

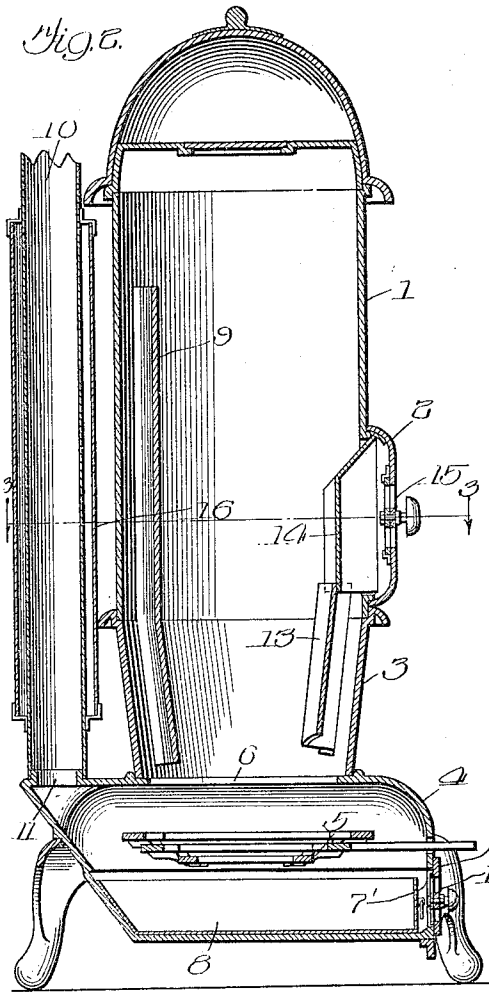


Fig. 1.

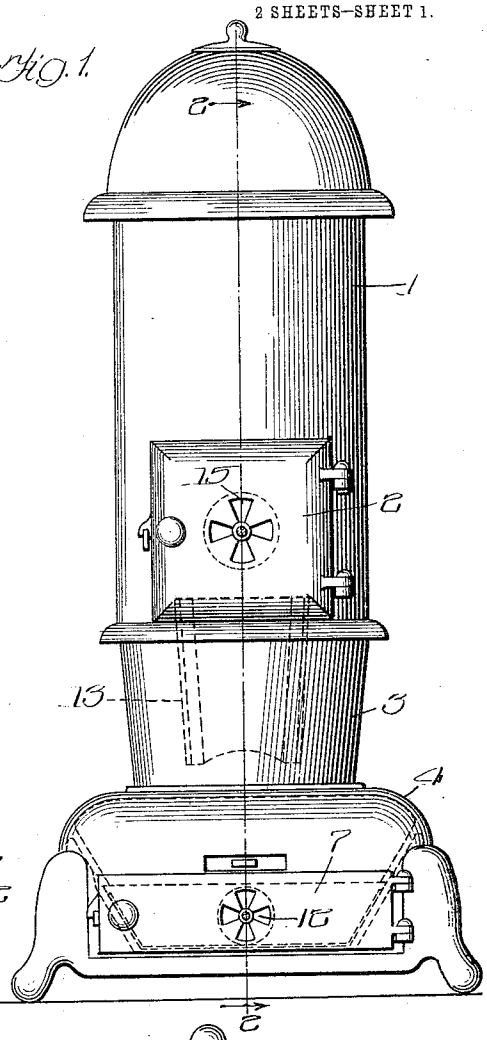
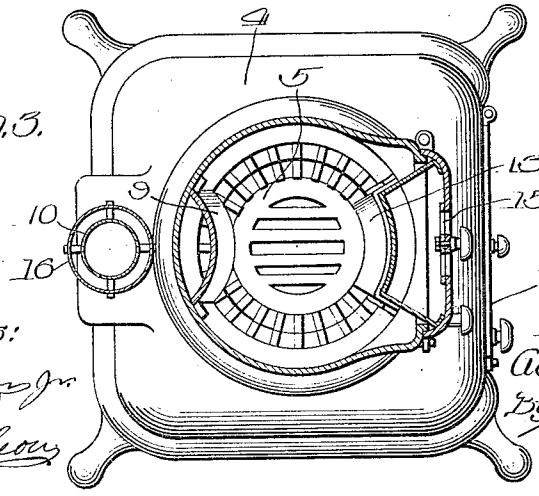


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

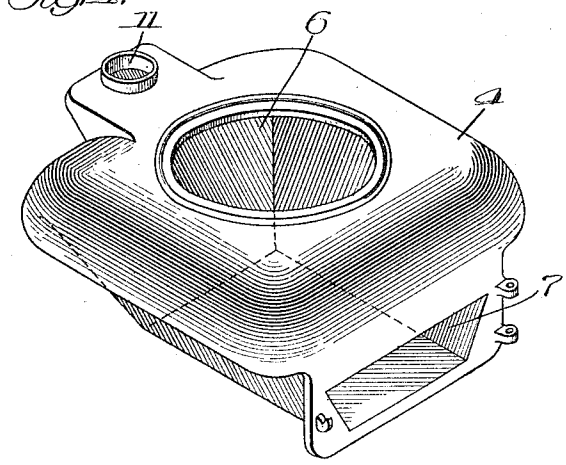
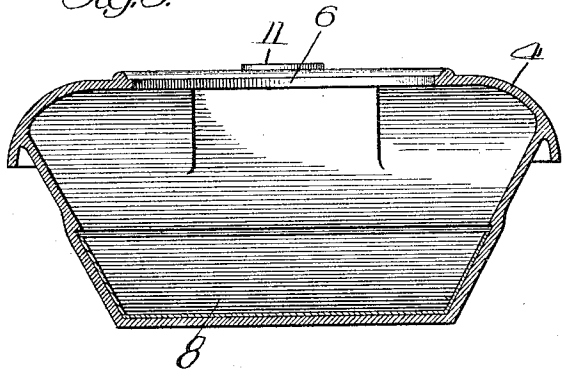


Fig. 5.



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UNITED STATES PATENT OFFICE.

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STOVE.

1,127,575. Specification of Letters Patent. Patented Feb. 9, 1915.

Application filed November 11, 1912. Serial No. 730,723.

To all whom it may concern:

Be it known that I, GEORGE E. ARNDT, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Stoves, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to stoves and is of particular service in connection with that class of stoves known as base heaters.

The invention has for one of its objects the provision of means whereby gaseous products of combustion which rise to the top of the stove may be carried to the fire box and there be burned before they pass off.

The invention has for another of its objects the provision of means for directing spent gas from the spacing above the grate directly to the piping which serves to convey the gaseous products of combustion to the chimney.

The invention has further features and advantages which will later be set forth.

In carrying out the invention a down draft flue affords communication between the spacing at the top of the stove and the spacing immediately above the grate, this latter spacing being in communication with the chimney pipe, the entire structure being so arranged that the gaseous products of combustion that find passage through the down draft flue are burned in the spacing above the grate before they are carried off.

The preferred form of stove includes a single box at the base of the stove whose walls are embraced in a single integral casting, this box supporting the stove grate between the bottom and top thereof and having various openings, one in its front wall for the withdrawal of ashes from beneath the grate, another for the escape of the gaseous products of combustion, and a third through which the unburned gases may be led from the top of the stove to the consuming space above the grate and through which third opening fuel may descend toward the grate to replace that which has been consumed and also through which third opening fresh air is preferably directed downwardly (having been drawn from the exterior) so as to promote combustion and direct the exit of the spent gases through the chimney pipe. The latter two openings are in the top of the box.

I will explain my invention more fully by reference to the accompanying drawing showing the preferred embodiment thereof and in which—

Figure 1 is a view in elevation of a stove as constructed in accordance with the preferred embodiment of the invention; Fig. 2 is a sectional view on line 2 2 of Fig. 1; Fig. 3 is a sectional view on line 3 3 of Fig. 2; Fig. 4 is a perspective view showing the composite ash and fire box; and Fig. 5 is a cross sectional view of the structure shown in Fig. 4.

Like parts are indicated by similar characters of reference throughout the different figures.

In the embodiment of the invention shown, but to which embodiment the invention is not to be limited, I have employed a vertical tubular member or chamber 1 having a door 2 for permitting the passage of fuel to the stove interior, this tubular member 1 resting upon a magazine element 3, constituting a lower continuation of the chamber 1 and located in the position usually occupied by a fire box in former styles. The magazine element 3 rests upon the top of a box 4, this box supporting a grate 5 upon its interior, preferably substantially midway between the top and bottom walls of the box. The top of the box is provided with an opening 6 in alinement with the lower end of the magazine 3, whereby fuel may descend toward the grate to replace that which is consumed, the stove thus preferably being a self-feeder.

The box 4 is provided with a door 7 at its lower front portion. When this door is open access may be had through the doorway 7^1 to the portion of the box space below the grate 5 for the purpose of removing accumulated ashes, which may for the sake of convenience, be caught within an ash pan 8 which may be bodily passed through the door opening 7^1, though the invention is not to be limited to the employment of an ash pan. When an ash pan is employed the spacing within the box 4 is desirably enlarged where the pan is to be received so that the upper parts of the side and rear box walls may be in better alinement with the walls of the pan, or overhang the same, to prevent ashes from readily fall-

ing between the pan and box. Some unspent gaseous products of combustion may rise through the fuel held in the magazine to the top of the stove. In order to prevent accumulation of such unspent gases at the top of the stove I employ a down draft flue formed in part of a portion of the wall of the element 1 and in part by a segmental metal sheet 9, this flue being open at the top of the stove, there to receive the unspent gaseous products of combustion, and terminating just above the opening 6 in the box 4 whereby the gases flowing downwardly through the down draft pipe are directed into the fire supported by the grate, such gases being there consumed. The flow of the unconsumed gaseous products of combustion through the down draft pipe or duct at 9 is induced as a consequence of the draft or chimney pipe 10 rising directly from the top of the box 4, one end of which has communication with the chimney while the other end has communication with the space above the fire grate at the opening 11 in the top of the box. The ash pit door 7 has a register 12 through which air is drawn from the exterior, this air finding passage through the stove grate 5 and thence through the chimney pipe 10 by way of the opening 11. Combustion takes place in the upper part of the box 4, draft for promoting combustion passing across the box to the pipe and from the register 12 across the ash pit space and through the grate to the chimney opening 11, products of combustion passing directly out of the box to the stove pipe. If the regulable register 12 alone be open, or if the ash pit door 7 be open or if the door 2 or its register be open the draft is in a uniform direction, namely, from such opening or openings to the chimney pipe, whereby ashes, dust, smoke and gases are prevented from being blown into the room.

In the preferred embodiment of the invention the front of the stove is equipped with a down draft flue formed in part by the door 2 and having a wall portion 14 carried by the door (as indicated in Figs. 2 and 3) there being a complemental part formed by a portion of the magazine chamber 3 and a segmental wall portion 13. When the door 2 is closed the flue wall portion 13 is engaged by the flue wall portion 14 which latter is carried by the door 2, the flue being complete when the door is shut. Air is admitted to this flue through the regulable register 15 into the box 4 above the grate 5, the down draft flue just described terminating at its lower end just short of such box at the opening 6 therein. The air admitted at 15 finds passage across the grate and upwardly into the flue 10, this air in passing carrying with it certain gaseous products of combustion that have not ascended through the magazine 3. This air also promotes the downward passage of products of combustion through the flue at 9. In the box 4, whether made in one integral casting or otherwise, there is formed the hole 11 for establishing communication between the fuel consuming space and the chimney pipe 10, and such employment of the hole 11 is a novel part of my present construction particularly when the fresh air flue 13, 14 is provided for the purpose which has been described. The stove heat is generated in the box 4 so that the stove thus becomes a base heater. To take advantage of the heated spent products of combustion passing through the stove pipe 10 I surround such pipe by a heating drum 16 which is open at its bottom for the reception of cool air and at its top for the discharge of heated air. As will be seen the courses followed by the fresh air and the products of combustion are directed away from the doors 2 and 7 so that no smoke or dust is likely to escape from the stove into the room containing the same.

It will be observed that the down draft flue formed of the elements 2, 13 and 14 serves to direct the fresh air into the fuel consuming space from which it passes into the chimney pipe, this down draft flue thus differing from other down draft flues as hitherto employed.

While I have herein shown and particularly described the preferred embodiment of the invention, I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of the invention, but

Thus having described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A stove including a box constituting a lower chamber, a grate arranged in said lower chamber, a fuel magazine above the chamber and communicating therewith through an opening formed in the box, an upper chamber, there being an opening formed in said upper chamber, a door forming a closure for said opening, there being draft openings formed in the door, a deflector carried by the door and directing air admitted through the door downwardly to the fuel magazine, a flue arranged within the fire pot and forming a continuation of the deflector, said flue discharging above the grate there being a draft opening in the box below the grate and at the side of the fuel magazine adjacent the flue carried thereby, a down draft flue extending vertically of the chamber and fuel magazine and discharging at a point diametrically opposite the discharge point of the flue which is carried by the fuel magazine, and a chimney communicating with the box, the down draft flue discharging

into the box at the side of the grate adjacent where the chimney communicates therewith.

2. A stove including a box constituting a lower chamber, grate arranged in said lower chamber intermediate its top and bottom there being an air opening in the box beneath the grate, a fuel magazine communicating with an opening formed in the box, an air flue arranged in the fuel magazine and discharging above the grate, an upper chamber, there being an opening formed in said upper chamber, means for conducting air from said opening through the flue arranged in the fuel magazine, a down draft flue extending vertically of the upper chamber and fuel magazine and discharging above the grate at a point diametrically opposite the air flue and a chimney communicating with the lower chamber adjacent the discharge end of said down draft flue.

3. A stove including a composite fire and ash receiving box having a fuel passage opening at its top for the passage of fuel into the fire containing portion of the box, a smoke pipe opening at its top for the passage of products of combustion to the chimney, and a third opening which is in the ash receiving portion of the box; a grate between the top and bottom of the box and dividing the box into the fire containing and ash receiving portions thereof; a fuel magazine separately formed from the box and assembled therewith to have the opening at the bottom of said magazine in register with the fuel passage opening at the top of the box; a down draft gas flue within the magazine which is in communication at its upper end with the upper portion of the fuel magazine and at its lower end with the smoke pipe opening in the box by way of the fuel passage opening at the top of the box to pass gas resulting from burning fuel; and a smoke pipe projecting upwardly from the smoke pipe opening.

In witness whereof, I hereunto subscribe my name this eighth day of November A. D., 1912.

GEORGE E. ARNDT.

Witnesses:

GEORGE L. CRAGG,

ETTA L. WHITE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."