J. T. DAVY.

Stove.

No. 35,221. Patented May 13, 1862.

Fig. 4

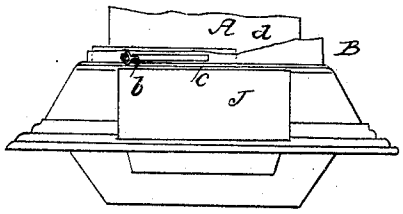


Fig. 3

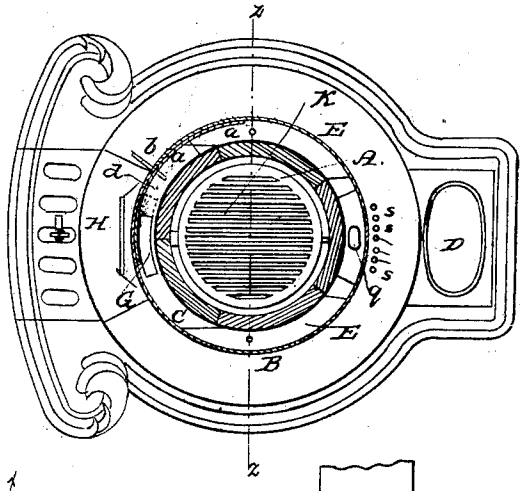


Fig. 1

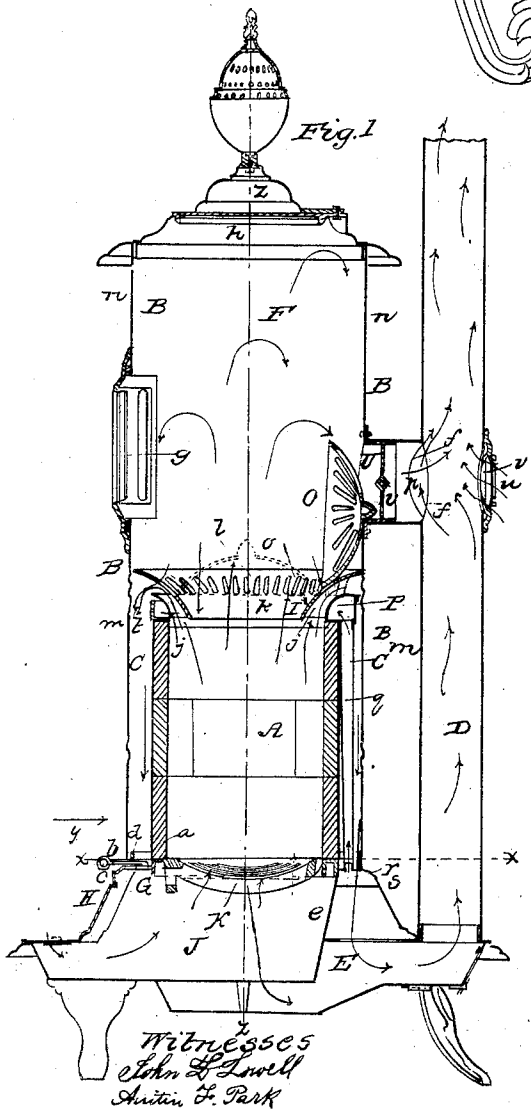
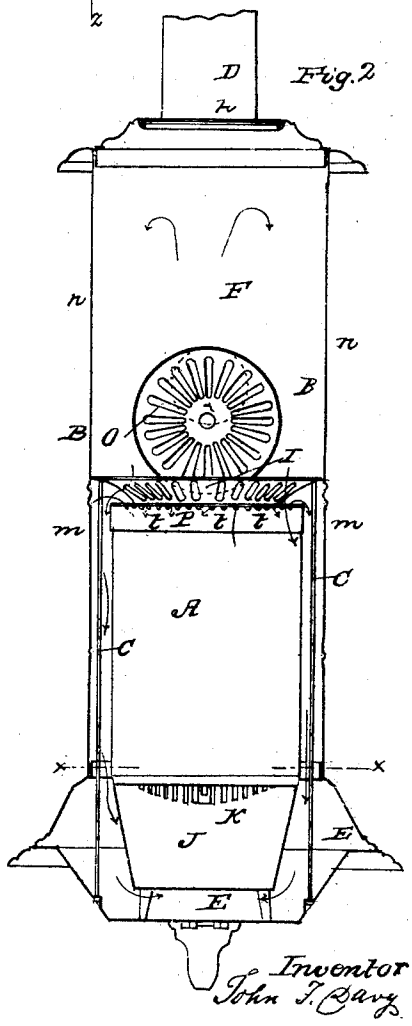


Fig. 2



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UNITED STATES PATENT OFFICE.

JOHN T. DAVY, OF TROY, NEW YORK.

STOVE.

Specification of Letters Patent No. 35,221, dated May 13, 1862.

To all whom it may concern:

Be it known that I, JOHN T. DAVY, of the city of Troy, in the county of Rensselaer and State of New York, have invented a certain new and Improved Stove for Warming Apartments; and I do hereby declare that the following is a full and exact description of my said improved stove and invention, reference being had to the annexed drawings, in which—

Figure 1 is a central vertical section, from front to rear, of a stove in which my invention is embodied. Fig. 2 is a vertical section of the casing and ash-box of the same stove, at the line *z*—*z*, and elevation of the outer side of the coal-pot and some other internal parts of the stove, viewed in the direction pointed by the arrow *y* in Fig. 1. Fig. 3 is a horizontal section at, and plan of some parts below, the line *x x* in Figs. 1 and 2; and Fig. 4 is an elevation of a part of the front side of the same stove.

The same letters refer to like parts in all the figures; and the red arrows therein indicate the courses of the gases of combustion, and the black arrows the courses of the atmospheric air, through the stove.

In the annexed drawings, A is the coal-pot; and B is the outer casing of the stove.

C is a descending fire-flue located between the coal-pot and the surrounding casing B, and having communication, by a flue-space, E, with an exit pipe D.

F is a flame-chamber directly over the coal-pot, and having an opening, closed by a door, *g*, in its side; through which opening coal is to be supplied to the pot A.

I is a plate arranged at a distance above the top of the coal-pot A, but below the door *g*, and extended from the casing B, inward and downward, over the flue C and to within the rim of the coal-pot; so as to cut off the direct downward draft from the chamber F into the flue C, and leave a direct fire-passage, *j*, Fig. 1, between the under side of the plate I and the rim of the coal-pot, from the interior of the coal-pot into the flue C; and also leave a direct upward gas-passage, *k*, from the interior of the coal pot into the flame-chamber F.

That part of the plate I which is within or inside of the top of the rim of the coal-pot A, may be either with or without perforations, *l*; and the fire-passage *j* may extend either entirely, or only part way, around the rim of the coal-pot.

I thus arrange the plate I in combination with the coal-pot A, reverting chamber F, and descending flue C, all arranged together as above described, not only in order to guide the coal into the coal-pot and to prevent the coal from falling into the flue C, when the coal is being put through the doorway at *g*, or top-opening at *h*, into the chamber F, to fill the coal-pot; but also in order to effect a two-fold purpose besides to wit:—First, to intercept and guide through the passage *j*, into the descending flue C, and directly against the inner surface of the lower part of the casing B of the stove, that portion of the gases of combustion which rises along the inner side of the coal-pot, and which is generally hotter and more nearly consumed than the carbureted gases and smoky matters that rise through the middle of the coal in the coal-pot; and thereby make the lower part of the stove-casing B much hotter, where it is desirable to have the most heat radiated from the stove, than if all the gases of combustion were made to first rise into the chamber F, and there lose part of their heat, before entering the descending flue C. And second, to intercept the partially cooled gases in their descent along the casing B, from the chamber F into the flue C, and cause those gases to move inward across the upper surface of the plate I, and to pass around, or through the perforations in the highly heated inner part of that plate where it projects within the rim of the coal-pot or over the ignited coal therein; so as to thereby re-heat those gases, and consequently give more heat to the lower portion of the radiating casing of the stove, than if the gases were allowed to descend from the chamber F, in their partially cooled state, directly downward along the casing B, into the top of the flue C.

O, Figs. 1 and 2, is a movable, perforated plate, which, after the pot A has been supplied with coal, is placed, as indicated by the dotted lines at *o* in Fig. 1, across the gas-passage, *k*, between the coal-pot and the combustion chamber F; for the purpose of intercepting and reflecting a portion of the heat and gases rising from the fire in the coal-pot, back upon the coal, itself; so as to thereby increase the combustion and keep

the fire alive and bright in the top of the coal, even when the draft through the grate K is mostly shut off; and so as to cause more of the gases to pass directly outward against the stove-casing, and thereby increase the radiation of heat from the lower part of the stove, instead of first rising into and losing heat within the chamber F: and also for the purpose of more strongly reheating the partially cooled gases of the expansion chamber F, by allowing them to pass down through the highly heated perforated plate O, on their way to the flue C along the radiating casing of the stove.

P, is an air-heating chamber, mounted on or forming the top of the coal-pot A, and communicating with the atmosphere by any suitable air-passage; as, for example, by means of the pipe *g*, Fig. 1, within the flue C, the flue *r* in the top of the gas-passage E, and the apertures in the casing B. The air-chamber P also has communication with the flue C by a slit or series of small holes, *t*, in the outer side of the air-chamber. I thus arrange the apertures *t* in the outer side of the air-heating chamber P, when combined with the coal-pot A, expansion chamber F, descending flue C and deflecting plate I as above described, for the purpose of supplying heated atmospheric air, to promote the combustion, within the flue C, and in close contact with the lower portion of the stove-casing B, of the combustible gases and fuliginous matters; in which, the deflecting plate, I, generally insures sufficient heat to make them burn, if supplied with heated atmospheric air, when they arrive in the flue C, from the expansion chamber F.

U, Fig. 1, is a direct fire-flue from the chamber F into the draft-pipe D, which latter extends above the flue U; and *v* is a valve so arranged in the flue U, that, when the latter is closed by the valve as shown in Fig. 1, there will then be a chamber or recess, *p*, between the valve *v* and the draft-pipe D. The pipe D has an opening at *w* provided with a register or door, *u*, to admit cold air, directly opposite to the flue U. The cold-air inlet-opening *w* is arranged in that particular position in the draft-pipe D, in combination with the coal-pot A, expansion chamber F, descending and base flues C E, and direct flue U with its valve *v* and extension *p*, as above described, in order that when the door *u* and valve *v* are both left open, the current of air which will then enter the draft pipe through the opening *w*, shall directly meet and more effectually lessen the draft of the gases of combustion from the chamber F through the flue U into the pipe D, than if the opening *w* was arranged either above, or below or to one side of the flue U. This may be desirable when it is required to just keep the fire alive in the stove, over night or while the occupants are absent from the office or apartment in which the stove is used, with the least consumption of coal and radiation or waste of heat. Also, in order that while the passage U is closed by the valve *v*, and the door *u* is open to admit air into and thereby lessen the strength of the draft through, the pipe D, the outer part, *p*, of the flue U shall then serve as a chamber or recess into which the suffocating gases rising from the flue E through the pipe D, may turn and pass by the opening *w*, as indicated by the arrows *f f* in Fig. 1, with less liability of getting out of the pipe through the opening *w* and poisoning the air of the apartment in which the stove is used, than if the inlet, *w*, was arranged either above or below the chamber *p* in the end of the flue U.

G, Figs. 3 and 1, is a dust-passage from the forward part of the top side of the ash box, J, between its removable front side or cover H and the grate K, into the fire-flue C. The opening G is furnished with a sliding cover, *a*, which has a handle, *b*, which extends outward through a slot, *c*, Fig. 4 in the casing of the stove, and has a slide, *d*, which covers the slot *c* in whatever position the cover, *a*, can be placed by the handle, *b*, in respect to the dust-passage G. Ordinarily the opening G is to be kept closed by the cover *a*, as shown in Fig. 1; but while the grate K is being shaken and when ashes are being taken out of the ash box J at its open front side, the cover, *a*, is then to be slid and kept off from that opening, G, as shown in Fig. 3, so that the ash-dust which at such times ordinarily rises at the open front side of the ash-box, will rise up directly through the opening G into the fire-flue C, and will consequently be less liable to rise outside of the stove, into the apartment in which the stove is used, than would be the case if there was merely an opening through the rear end, *e*, of the ash-box into the fire-flues.

Now, I do not claim as new the above described arrangement of the coal-pot A, expansion chamber F, and descending flue C having connection with the draft-pipe D. And I do not claim the arrangement of a perforated plate, O, between and with the coal-pot A and chamber F provided with a movable feed-door or cover *g* or *h;* except when the said perforated plate, O, is removable, and when the gases which rise from the coal-pot through the perforated plate into the chamber F, are allowed to descend through and be reheated by the said perforated plate, in their passage from the chamber F into the heat-radiating flues of the stove, essentially as hereinbefore set forth. And I do not broadly claim the combination of the coal-pot A, chamber F, descending flue *c* communicating with the draft pipe D, and an air-heating chamber

P on the top of the coal-pot and having communication with the open air, and also with the throat of the coal-pot, or with the interior of gas-flues leading therefrom.

What I claim as new and of my invention and desire to secure by Letters Patent is—

1. The particular arrangement of the deflecting plate, I, in combination with the coal-pot, A, reverting chamber, F, and radiating flue *c* in communication with the draft-pipe, D, as and for the purposes herein shown and specified.

2. The arrangement of the movable perforated plate, O, across the gas-passage, *k*, between the coal-pot, A, and reverting chamber F, in combination with the lateral gas-passage *j*, below the chamber F, and the radiating flue *c* communicating with the exit pipe, D, as and for the purpose herein described.

3. The arrangement of the series of small apertures *t* or their equivalent, in the outer side of the chamber P communicating with the open air and forming the top or rim of the coal-pot A, in combination with the expansion chamber F, lateral gas-passage *j*, and radiating flue *c* communicating with the draft-pipe of the stove, as and for the purpose herein set forth.

JOHN T. DAVY.

Witnesses:
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AUSTIN F. PARK.