

(No Model.)

3 Sheets—Sheet 1.

C. A. HAMLIN.

COAL STOVE.

No. 263,513.

Patented Aug. 29, 1882.

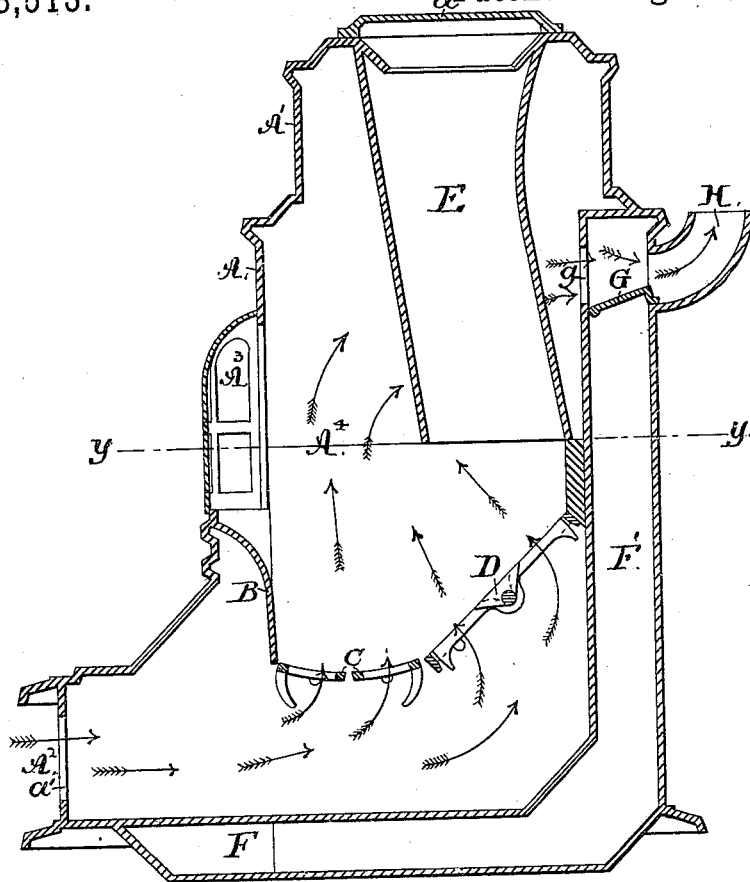


FIG. 1.

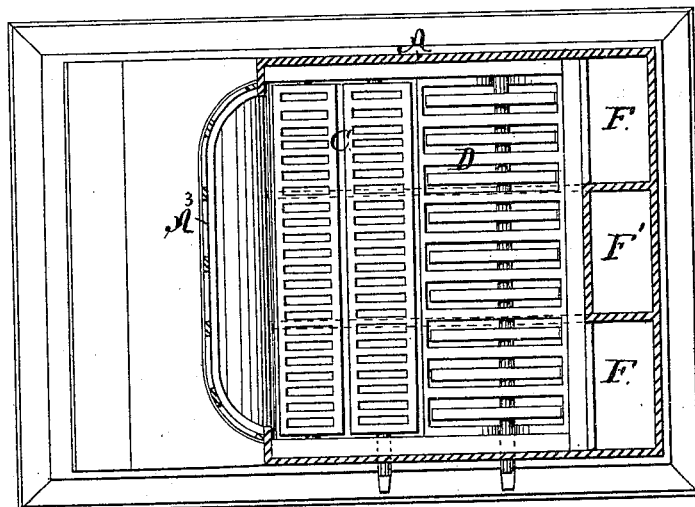


FIG. 4.

Witnesses.
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C. S. Winne.

Inventor.
CHAS. A. HAMLIN,
by William H. Bow,
Attorney.

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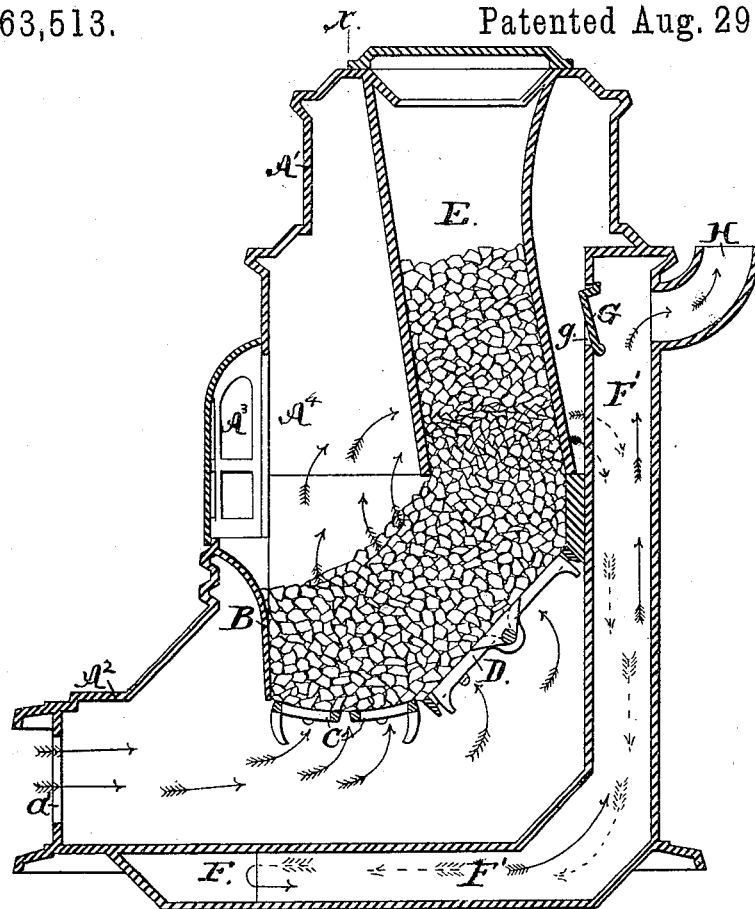


FIG. 2.

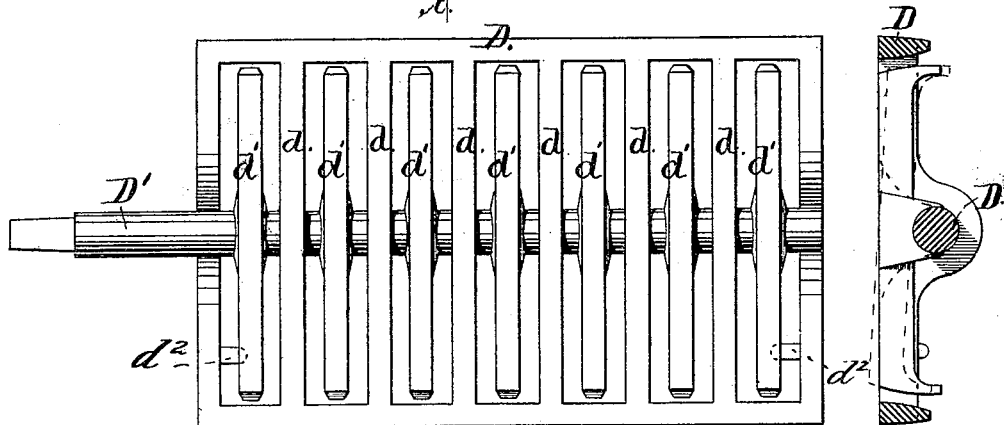


FIG. 5.

FIG. 6.

Witnesses.
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(No Model.)

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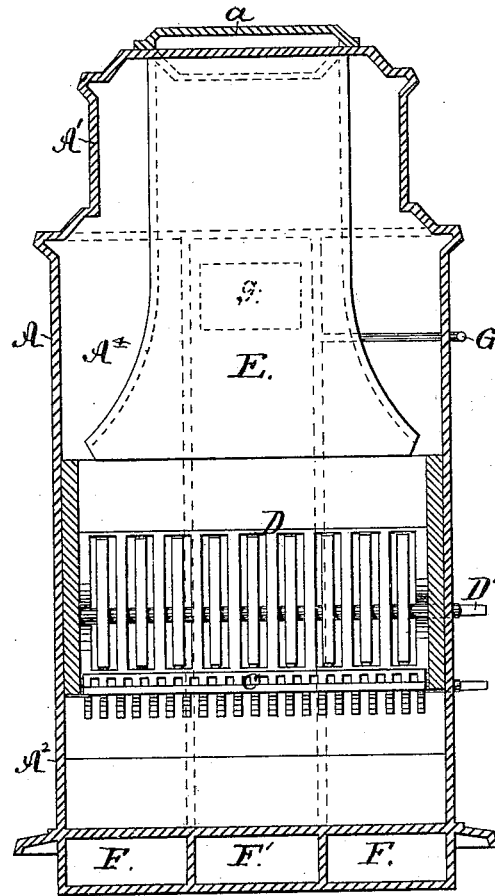


FIG. 3.

Witnesses.

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Inventor:

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UNITED STATES PATENT OFFICE.

CHARLES A. HAMLIN, OF GREENBUSH, ASSIGNOR TO CLARENCE RATHBONE,
OF ALBANY, NEW YORK.

COAL-STOVE.

SPECIFICATION forming part of Letters Patent No. 263,513, dated August 29, 1882.

Application filed January 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. HAMLIN, of Greenbush, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Coal-Stoves, of which the following is a specification.

My invention relates to improvements in that class of coal-stoves in which the supply of fuel is contained in a magazine or feeder, from which the coal is automatically fed to the fire, and wherein an inclined rear grate is placed in such close proximity to the flues in the back part of the stove that no opening can be made (through the back of the stove) for obtaining access to said grate for the purpose of raking the coals lying thereon and creating a feeding movement of the fuel from the magazine; and the objects of my improvements are, first, to afford proper facilities for agitating the inclined rear grate in such manner that the ashes contained in the fuel lying on said grate will be sifted therefrom, and by means of said agitating movement to effect the feeding forward of the fuel from the magazine in a more positive and perfect manner than can be obtained when the force of gravity alone is depended upon to effect that purpose; and, second, to combine with the means described for effecting the downward and forward movement of the fuel from the magazine proper facilities for removing from the bottom part of the fire-box the clinkers and other incombustible débris deposited therein by the action of the inclined rear grate. These objects I attain by means of the construction illustrated in the accompanying drawings, which form part of this specification, and in which—

Figure 1 is a longitudinal section of my improved stove with the damper arranged for producing a direct draft from the combustion-chamber to the escape-pipe; Fig. 2, the same, with the damper closed over the direct-draft opening to force the draft-currents through the revertible flues; Fig. 3, a transverse vertical section at the line *x x* of Fig. 2; Fig. 4, a horizontal section at the line *y y* of Fig. 1; and Figs. 5 and 6 are respectively an enlarged and detached plan view and transverse section of the inclined rear grate.

Among the most palpable defects in the magazine-stove, as commonly constructed, is

the location of the magazine centrally over the fire-bed, whereby only a small annular space is left at the surface of the burning fuel for the passage of the escaping draft-currents, and for the radiation of heat from the surface of the incandescent fuel. Besides this the draft-currents are forced to pass through the fuel in vertical lines, or nearly so, from the bottom grate of the fire-pot until they escape at the top of the burning fuel through the annular space above referred to, and from this cause the most active combustion occurs in the coal lying against the sides of the fire-pot, thereby causing a rapid accumulation of ashes and débris at that part of the fire to impede the passage of the draft-currents therethrough, and to prevent the passage of heat through the sides of the fire-pot. By my improvements these defects are remedied.

As illustrated in the drawings, A is the body of the stove, provided with an upper section, A', an ash-pit section, A², and a mica door, A³; B, an imperforate front fire-plate; C, the bottom grate; D, the inclined rear grate; E, the magazine or feeder; F, the down-cast flues; F', the up cast flue; G, the damper for controlling the direct draft opening *g*, and H the escape-pipe.

The body A of the stove I preferably make of a quadrangular form in its horizontal section, as shown in Fig. 4, for the purpose of obtaining an equable and uniform thickness in the body of the fuel where the draft-currents pass through it. The upper section, A', is provided with a movable cover, *a*, for closing over the upper end of the magazine E. The ash-pit section A² is furnished with inlet air-openings *a'* in its front plate for the purpose of admitting air for supporting combustion. The mica door A³ is preferably fitted to a swelled projection formed on the front of the stove for the purpose of increasing the capacity of the combustion-chamber A⁴.

The front plate, B, of the fire-box consists of an imperforate plate whose upper portion is deflected forward to meet the swelled projection at or near the bottom of the opening for the mica door A³.

The bottom grate, C, as illustrated in the drawings, consists of the grate patented by Samuel Smyth October 21, 1873, and is com-

posed of two counterpart sections provided with a series of bars of a combined concave and convex form, as shown in the drawings. Each section is adapted to swing upon horizontal trunnions, and the two are connected by gearing or other suitable means to move simultaneously and effect by a positive cutting movement the removal of the débris from the bottom of the burning fuel. The form and mode of operation of said grate are such that in effecting the cutting out of the débris the mass of fuel lying directly over the grate will be held up by the convex portion of the grate-bars of both sections of the grate in such manner that none of the unconsumed combustible fuel in the fire-box can fall into the ash-pit; but as any other form of grate that is adapted to cut out the débris in the manner above described may be substituted therefor I do not confine myself to that specific form.

The rear grate, D, is fixed in an inclined position, and runs upwardly from the rear edge of the grate C to the back plate of the ash-pit, and there joins to the rear wall of the fire-box. Said grate is arranged in an inclined position for the purpose of facilitating the flow of fuel toward the front of the fire-box, and it serves to sustain the fuel in the earliest stages of the combustion of such fuel as each fresh feeding thereof flows downward from the magazine to replace the coal consumed and maintain a uniform thickness of fuel on the grates; and in effecting the combustion of fuel lying on the grate D the air-currents will pass diagonally upward and forward therethrough, as indicated by the arrows in Fig. 2.

In order that the fuel from the magazine may be more positively and perfectly fed down the inclined surface of the grate D, and to provide for the removal of the accumulation of ashes, which, from the well-known effect of the contact of air upon burning coal, will of necessity rapidly collect on the grate D, whose position is inaccessible in respect to any exterior means for raking it in the usual manner, it is necessary to make some provision for agitating the fuel lying on said grate; and for that purpose the grate D is made in two parts, one part being stationary and the other movable. The stationary part (marked D in Figs. 5 and 6) consists of a rectangular frame provided with fixed bars d , which run in an unbroken and unobstructed line from the top to the bottom of said frame. The movable part consists of a horizontal shaft, D', supported in bearings in the end bars of the frame D, and provided with laterally-projecting arms or bars d' , so arranged as to lie in the spaces between the bars d of the stationary part, and so that the upper edges of all the bars d and

d' will lie upon the same plane, free from any obstruction. One end of the shaft D' projects outwardly through the side of the stove and affords the means for operating the movable part of the grate, which is adapted to receive a slight rocking motion that is limited in one of its phases by the bars d' striking the back plate of the ash-pit, and in the other phase by the stops d^2 on the frame D. The slight oscillatory motion of the movable grate serves to sift out the fine ashes lying on the inclined rear grate, and to cause the unconsumed coal, clinkers, and other heavy débris to slide downward on the bars d and d' , and thus be deposited on the bottom grate, C, whereon the unburned coal will be consumed, and from which the clinkers and other débris may be removed by the positive cutting movement of the bottom grate, as hereinbefore described.

The magazine E is pendently attached to the top of the upper section, A', so that the coal delivered therefrom will be lodged upon the inclined grate D.

The down-cast flues F are arranged at the rear of the fire-box and under the bottom of the ash-pit A². They extend toward the front of the stove, near which they join the forward extension of the up-cast flue F', through which the draft-currents are reverted toward the escape-pipe H.

The up-cast flue F' is provided with an opening, g , in proximity to the escape-pipe, for the purpose of producing a direct draft from the combustion-chamber A¹ to the escape-pipe; and a damper, G, adapted to close over the opening g , as shown in Fig. 2, affords the means for controlling the direction of the escaping draft-currents, so as to force them to pass either directly from the combustion-chamber to the escape-pipe or circuitously thereto through the revertible flues.

I claim as my invention—

The combination, with a fuel magazine or feeder, of an agitable rear grate fixed in an inclined position directly beneath the said magazine, for the purposes set forth, and a horizontal bottom grate or fire-bed placed contiguously to the lower edge of the inclined rear grate, the said bottom grate being composed of two movable sections having their axes arranged in parallel lines, and both sections being adapted to move synchronously to cut by a positive movement the débris from the lower part of the fire, and to support the superimposed fuel, as herein specified.

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Witnesses:

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