(No Model.)

D. McDONALD.

COMBINED COAL AND GAS STOVE.

No. 538,926. Patented May 7, 1895.

Fig. 1.

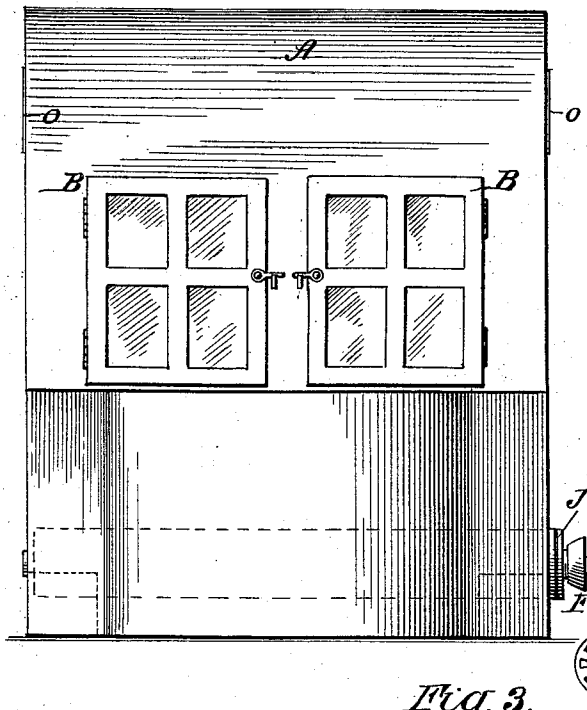


Fig. 2.

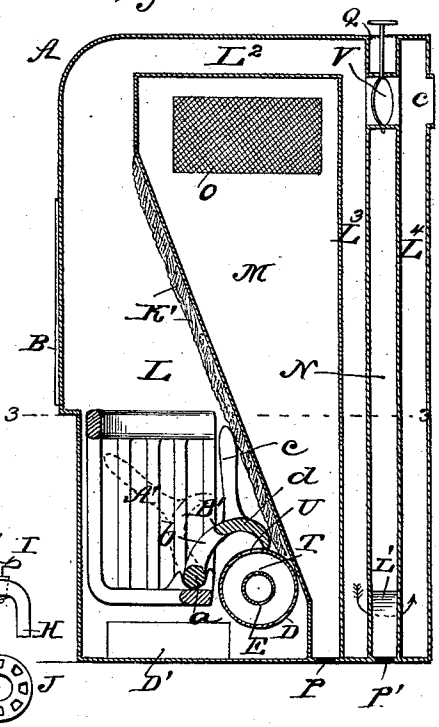
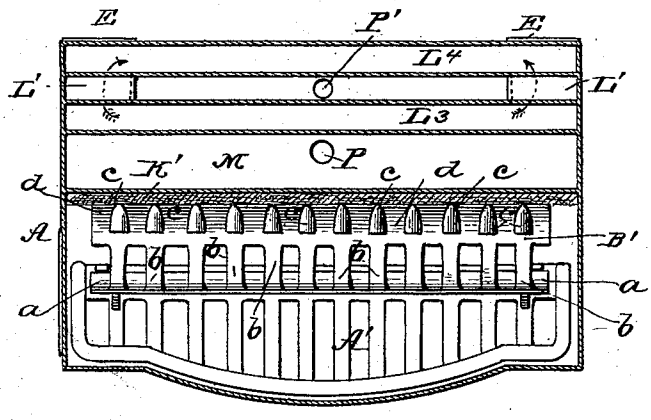


Fig. 3.



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COMBINED COAL AND GAS STOVE.

SPECIFICATION forming part of Letters Patent No. 538,926, dated May 7, 1895.

Application filed February 6, 1895. Serial No. 537,540. (No model.)

To all whom it may concern:

Be it known that I, DONALD McDONALD, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in a Combined Coal and Gas Stove, of which the following is a specification.

My invention is in the nature of an improvement upon my gas stove patented September 4, 1894, No. 525,665, and its object is to enable the stove to burn coal or other solid fuel, as well as gas, or both at the same time if desired. The demand for this arises from the fact that gas is an excellent fuel for mild weather, but rather too expensive when the weather is intensely cold, and in addition to this, the demands on the gas companies are so heavy when the weather is very cold that the supply frequently runs short.

My present invention provides means whereby the same stove may be well adapted to burning gas when it is desirable or possible to do so to advantage, or to burning solid fuel when gas is not available in sufficient quantity, or a hotter and more effective fire is needed; and it consists chiefly in the combination of a gas burner, a solid fuel grate or basket, and a supplemental grate which may be adjusted so as to cover and protect the gas burner and asbestos lining when coal is being used, or may be thrown back to expose the gas burner and give it full effectiveness when gas alone is being used, as will be hereinafter more fully described.

Figure 1 is a front elevation of my improved coal and gas stove. Fig. 2 is a vertical section taken transversely to the grate, and Fig. 3 is a horizontal section on line 3 3 of Fig. 2.

In the drawings, A represents the outer case which is as nearly air tight as practicable, and is provided with one or more doors B filled with mica and provided with suitable hinges and catches to permit the charging of solid fuel therethrough. The fire chamber L converges at the top and connects with a horizontal flue L^2, that passes rearwardly to and connects with a downdraft flue L^3, which at its bottom connects with an up-draft flue L^4 through openings L′ L′, and at its top has a short circuit or direct draft opening regulated by a damper V with handle.

M and N are hot air chambers which take in air through openings P P′ at the bottom and, after heating it by contact with the fire flues, discharge it into the rooms through grated openings O and Q at the top.

In the bottom of the fire chamber is arranged the gas burner D of the same construction shown in my patent aforenamed. This consists of an outer tube with an open end projecting beyond the stove and having a rotary register or air regulating shutter J as shown in Fig. 1, and having a series of holes U along its length, opening into the fire chamber. Within this tube is another E with holes T registering with the holes U. This tube E also projects outside the case and beyond the outer tube far enough to receive the air and gas mixing chamber F, rotary register G, valve I, and gas pipe H.

As so far described the device does not differ from that already patented to me. I make, however, the front of the stove slightly convex to improve the appearance and give more room for the basket or grate, and the shutter J of the air register I also prefer to make with openings registering with other openings by a rotary adjustment, instead of causing it to open by advancing and retreating on a screw as in my prior patent.

My improvement consists in setting the burner farther back in the stove, and putting a grate basket A′ in front and around the same to hold the coal or solid fuel, and providing a supplementary adjustable grate B′. The latter consists of a rock shaft *a* journaled on the bottom of the basket A′ or provided with trunnioned ends, grate bars *b*, a lip *d*, and vertical fingers *c* which extend up in front of the asbestos back K′ as far as the top of the coal grate, and protect it from disintegration or damage by contact with the solid fuel.

In burning coal, the supplemental grate B is thrown back over the burner D, and its lip *d* serves to cover the holes U of the burner and keep them from being filled and clogged with ashes and cinders, while the fingers *c* protect the asbestos backing K′ from damage by the coal and form the back side of the grate. In burning gas the supplementary grate B′ is thrown forward on its journals or trunnions to the position shown in dotted lines, where it lies out of sight behind the solid or imperforate lower front of the stove,

leaving the asbestos back K′ exposed, and the burner orifices in proper unobstructed relation thereto to cause the gas flames to impinge thereupon and give full effectiveness to the stove as a gas heater. When so adjusted it will be seen that the illumination of the incandescent asbestos back is visible through the mica doors without any unsightly obstruction in the grate.

When the supplementary grate B′ is thrown over the burner D for burning coal the lip *d* overhangs the openings U and protects them from the dropping ashes and cinders, but it does not entirely close these openings, but permits of the issuance of the jets of commingled gas and air into the grate and among the fuel. This permits of the utilization of the gaseous and solid fuel both at the same time, and while it may not be desirable to so use it as a regular thing, still it furnishes a very cleanly, quick, and desirable method of igniting the coal and starting the fire without kindling wood.

D′ is an opening, closed by a shutter, which can be opened a little for the purpose of draft when coal is being burned, and can be opened wide for the purpose of cleaning out ashes and cinders. E E are similar clean-out openings opposite the openings L′ L′ for the purpose of cleaning out ashes and soot that may be deposited in the fire flues L^3 and L^4.

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

1. A stove for burning either solid or gaseous fuel, consisting of a basket or grate, a burner for mixing and burning air and gas, and an adjustable supplementary grate adapted to form a portion of the basket and cover the gas burner orifices when in one position for burning solid fuel, and to expose the gas burner orifices when in the other position substantially as and for the purpose described.

2. A stove for burning either solid or gaseous fuel, consisting of a tightly inclosed case having a fire chamber with a basket or grate in its lower portion and mica filled doors above the grate, a burner for mixing and burning air and gas discharging into the grate, and an adjustable supplementary grate adapted to cover said burner and form a part of the basket when in one position for burning solid fuel, and to expose the burner when in its other position substantially as and for the purpose described.

3. A stove for burning either solid or gaseous fuel consisting of a tightly inclosed case having a fire chamber with a basket or grate in its lower part, and an asbestos backing, an air and gas burner discharging into the basket, and an adjustable supplementary grate adapted to cover the gas burner and extend up in front of and protect the asbestos and form also the back of the basket when in one position, and to expose the gas burner when in the other position substantially as and for the purpose described.

4. In a stove for burning either solid or gaseous fuel, the combination with the basket grate; of an air and gas burner located at the back and bottom portion of the same, an adjustable supplementary grate having a rotary axial adjustment about its front lower edge, and adapted to cover the burner and form the back of the basket in one position, and to expose the burner when tilted substantially as and for the purpose described.

5. In a stove for burning either solid or gaseous fuel, the combination with the basket; of an air and gas burner located at the back and bottom portion of the same, and an adjustable supplementary grate consisting of rock shaft *a*, grate bars *b*, lip *d*, and fingers *c*, adapted to cover and protect the burner and asbestos back and form a part of the basket when in one position, and to leave the burner and asbestos unobstructed when tilted on its rock shaft substantially as and for the purpose described.

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Witnesses:
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