

(No Model.)

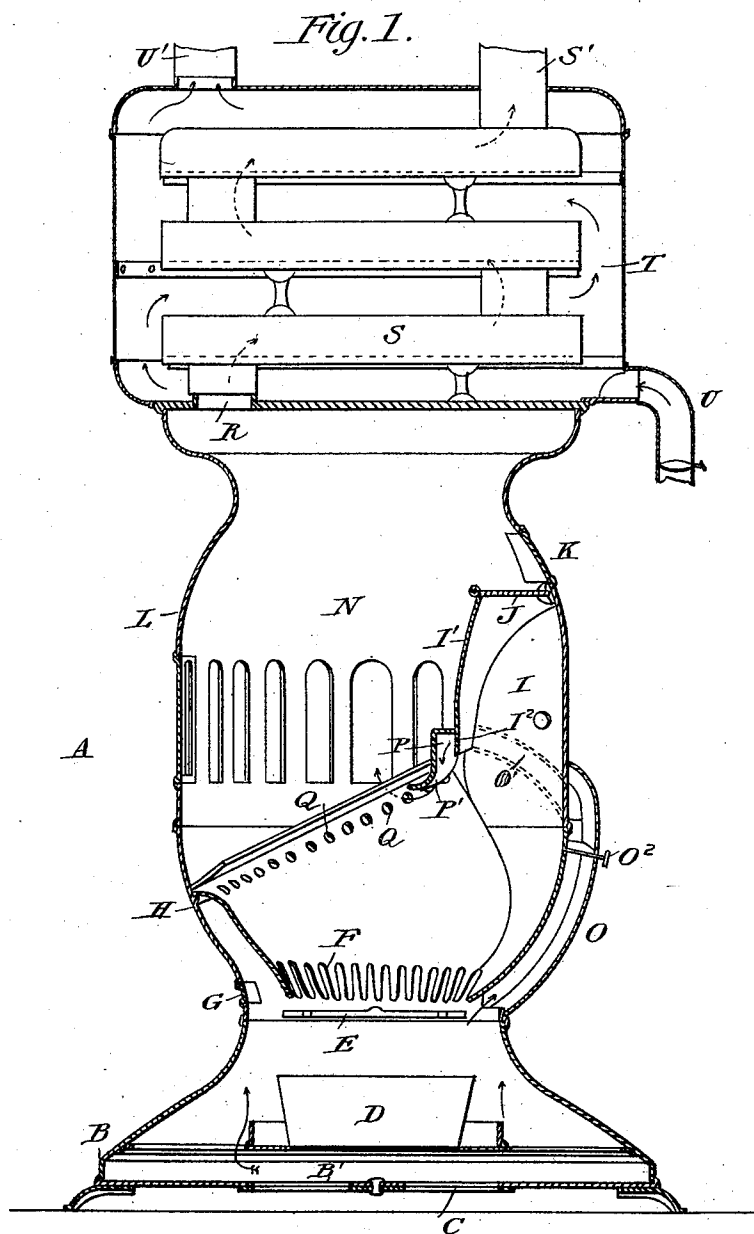
2 Sheets—Sheet 1.

C. H. L. SCHLAPP.

HEATING STOVE.

No. 378,979.

Patented Mar. 6, 1888.



WITNESSES:

S. Clark
C. Sedgwick

INVENTOR:

C. H. L. Schlapp

BY

Munn & Co

ATTORNEYS.

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Fig. 2

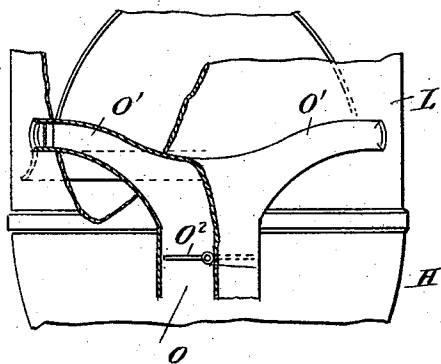
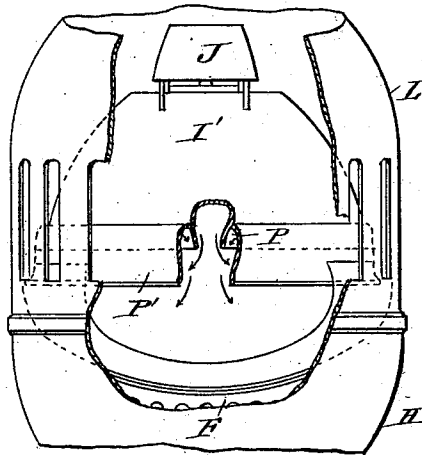


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES H. L. SCHLAPP, OF DAVENPORT, IOWA.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 378,979, dated March 6, 1888.

Application filed September 2, 1887. Serial No. 248,655. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. L. SCHLAPP, of Davenport, in the county of Scott and State of Iowa, have invented a new and Improved Heating-Stove, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved heating-stove especially adapted for the complete combustion of bituminous coal, the economical use of the fuel being thus greatly facilitated.

The invention consists in the construction and arrangement of certain parts and details of a heating-stove and in the combinations of the parts thereof. The fuel used in the stove in its transformation or combustion is made to pass through two distinct stages—viz., the distillation and the combustion stages. The object of making the fuel go through two stages is to facilitate the thorough admixture of heated air at the right moment and in proper quantities to the heavy hydrocarbon gases resulting from the dry distillation of bituminous coal before such gases have the opportunity to become intermingled with the products of combustion. The details of my improved combination and arrangement of the parts of the stove will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a central sectional elevation of my improvement. Fig. 2 is a rear elevation of part of my improvement with parts in section, and Fig. 3 is a front elevation of part of my improvement with parts of the front removed and other parts in section.

My improved stove A is provided with a base, B, in the bottom of which are the openings B', over which operates a damper, C, of any approved construction, to admit air to the interior of the stove. On the base B is also supported the ash-pan D, in any suitable manner, and above the latter are placed the grate-bars E, upon which opens the lower part of the fire-pot F, and the clinker-door G, formed in the side of the middle part, H, of the stove, which middle part H also supports the said fire-pot

F. The fire pot F continues at one side into a magazine, I, closed at the inside by the wall I', and provided on top with a door, J, which connects with a door, K, formed in the side of the upper part, L, of the stove A. The magazine I is inclosed by the combustion chamber N, which extends over the top of the fire-pot F, which latter connects at its upper end with the mixing-chamber P, formed by the lower end, I'', of the inner wall, I', of the magazine I, and the wall P', secured to the inner wall, I', and curved inward at its lower end, as illustrated in Figs. 1 and 3. Into this mixing-chamber P opens at each end a branch pipe, O', of a channel, O, leading to the base of the stove A near the grate-bars E, thus passing over part of the fire pot F. In the channel O is held a damper, O'', for regulating the admission of air passing to the mixing-chamber P from the base B of the stove A. The upper end of the fire-pot F is provided with a series of apertures, Q, for admitting air from the base B into the interior of the fire-pot F.

The combustion-chamber N is provided on its upper end with an outlet, R, leading into the connected short drums S, located in a vessel, T, set on the top of the stove A and used for generating hot air, which enters said vessel T through the flue U, and after passing back and forth through the intervening spaces between the short drums S finally passes out of the same through the flue U' at the top. The drums S have their outlet at S', which connects in the usual manner with the chimney. The object of the just-described arrangement is to provide a greatly-increased heating-surface, and also, if desired, it can be made to play the part of a ventilator. If the flue U be connected with the outside of the building, pure air may be drawn in, which, after becoming warmed and after passing through the flue U', may by means of a pipe or flue be directed to any distant apartment in the building if the separate heating of such be required.

The operation is as follows: The fire is started in the usual manner on the grate-bars E, and bituminous coal is introduced into the fire-pot F through the doors K and J, so that the coal entering the grate-bars E is changed into coke, and the rest of the magazine I and the

fire-pot F are nearly filled with coal in the usual manner. Now, it will be seen that the coal stored in the lower part of magazine I is coked before it reaches the fire-pot by the radiant heat and part of the hot carbon monoxide gases arising from the said incandescent coke, thereby rendering a fuel of mixed gases and coke for the final combustion, that burns with little or no smoke and is easily consumed. The mixture of combustible gases which are thus formed by the distillation process in the lower part of the magazine I overflows the lower curved edge, P', of the mixing-chamber P and comes in contact with the heated air supplied by the channel O to the mixing-chamber P, so that this mixture of gas and air passes under the surface of the incandescent coke below the curved edge P' of the mixing-chamber P into the combustion-chamber N on top of the fire-pot F, and is there burned before passing to the chimney. The perfect combustion of this highly-inflammable mixture of gas and air is produced by regulating the amount of air passing up the channel O by means of the damper O'. The ignition of this mixture of gas and air is also insured under all conditions by forcing said mixture to overflow the lower curved edge, P', of the above-mentioned mixing-chamber P, thereby coming in very close contact with the incandescent coke in the fire-pot. It will further be seen that after the mixture of gas and air reaches the combustion chamber the fullest scope for the development of perfect combustion is afforded, as the upper part of the stove is specially set apart as a combustion-chamber, so that the heat produced by this combustion of the gas, air, and coke is radiated from the stove and utilized for heating the room. All of the heat which passes up through the flues S to the chimney is utilized for heating the air entering the vessel T in the usual manner.

It will be seen that the coke in the fire-pot, which is gradually burned away, is continually replaced by a fresh supply coming down from the magazine and being coked before it reaches the lower end, P', of the mixing-chamber P, on account of the radiant heat and hot

gases, which continually rise and pass through the coal, as before described. The different stages of the coking and combustion processes are directly dependent on and variable with the amount of draft turned on under the grate E by the regulating-damper C. Hence the facilities for regulating the heating-power and the economical use of the fuel are very simple and efficient. The stove is also designed to be continuous in its operations. Therefore, with ordinary ease, in regulating the drafts the relighting of the fire may be made necessary—perhaps only once or twice in a whole season.

Thus hoping that I have produced in principle and construction a stove not very greatly inferior to the hard-coal burners, as regards cleanliness of operations, I think it may prove somewhat superior to the same as regards economy of use.

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

1. The combination, with the stove having a fire-pot and a combustion-chamber, N, into which the open upper end of said fire-pot opens, of the magazine I inside of the combustion-chamber, at one side thereof, just above the fire-pot, the mixing-chamber P around the lower inner edge of the magazine, and the air-supply passages leading to the said mixing chamber, substantially as set forth.

2. The combination, with the stove having draft-openings in its ash-pit, a fire-pot suspended at its upper end within the stove and provided with apertures Q around its upper end, a space being formed between the fire-pot and the stove body, and the combustion-chamber N, into which the upper end of the fire-pot opens, of the magazine I within the combustion-chamber at one side thereof, the mixing-chamber P around the lower inner edge of said chamber, and the passage O, leading from the ash-pit along the outer side of the fire-pot into the mixing-chamber P, substantially as set forth.

CHARLES H. L. SCHLAPP.

Witnesses:

HUGO KOCHLER,
HENRY THUENEN.