3 Sheets—Sheet 1.

G. NEWCOMER.

STOVE.

No. 172,276. Patented Jan. 18, 1876.

Fig 1

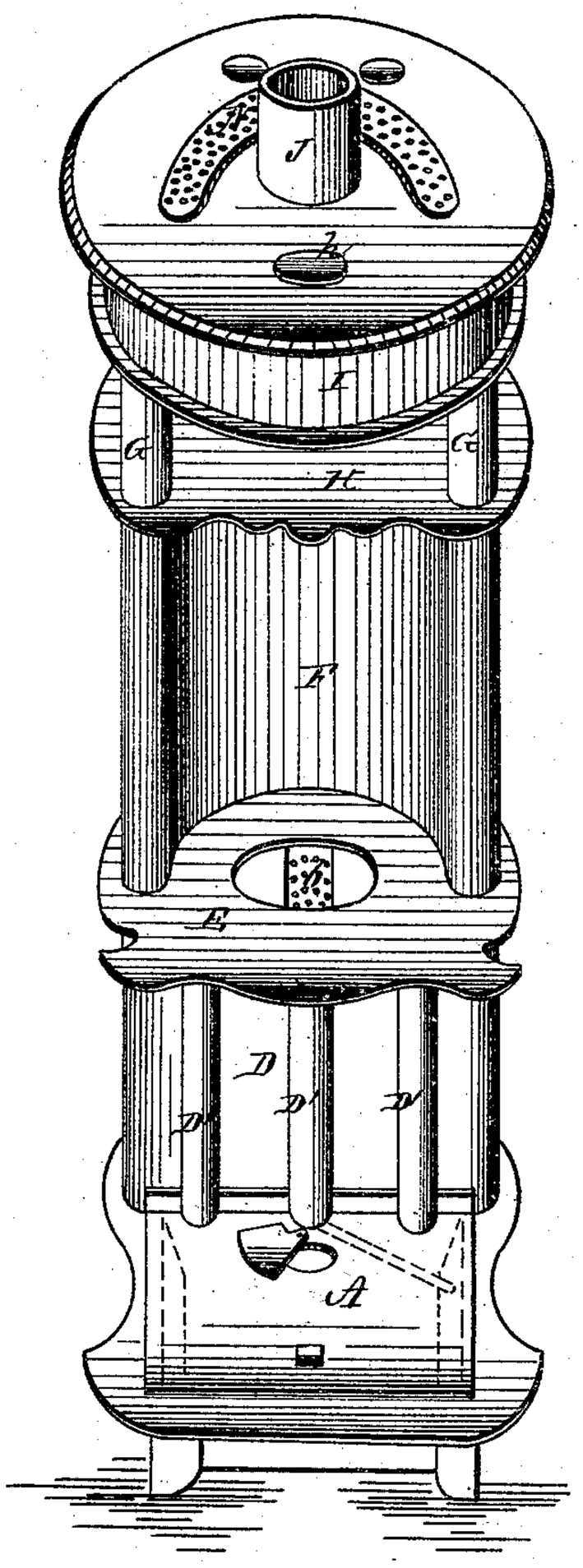

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Fig 2

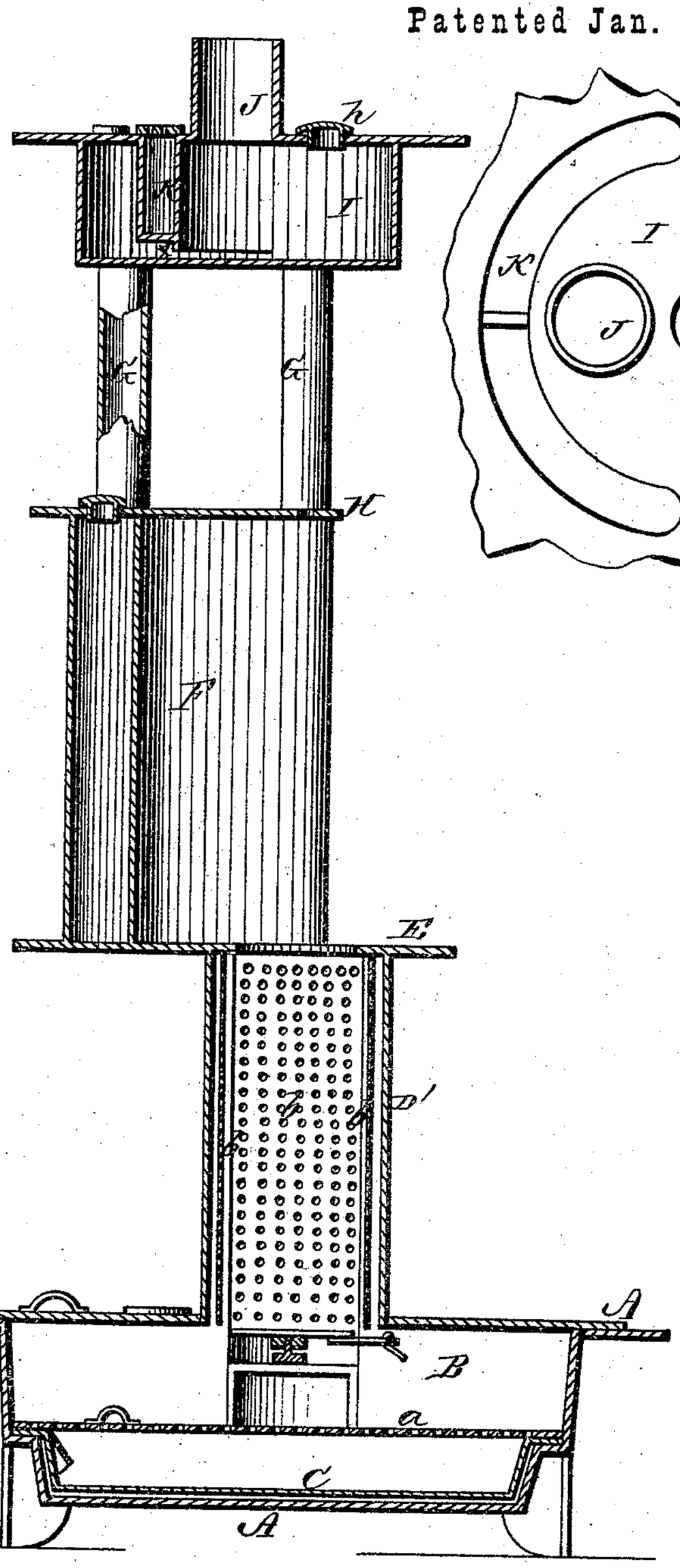

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Fig 3

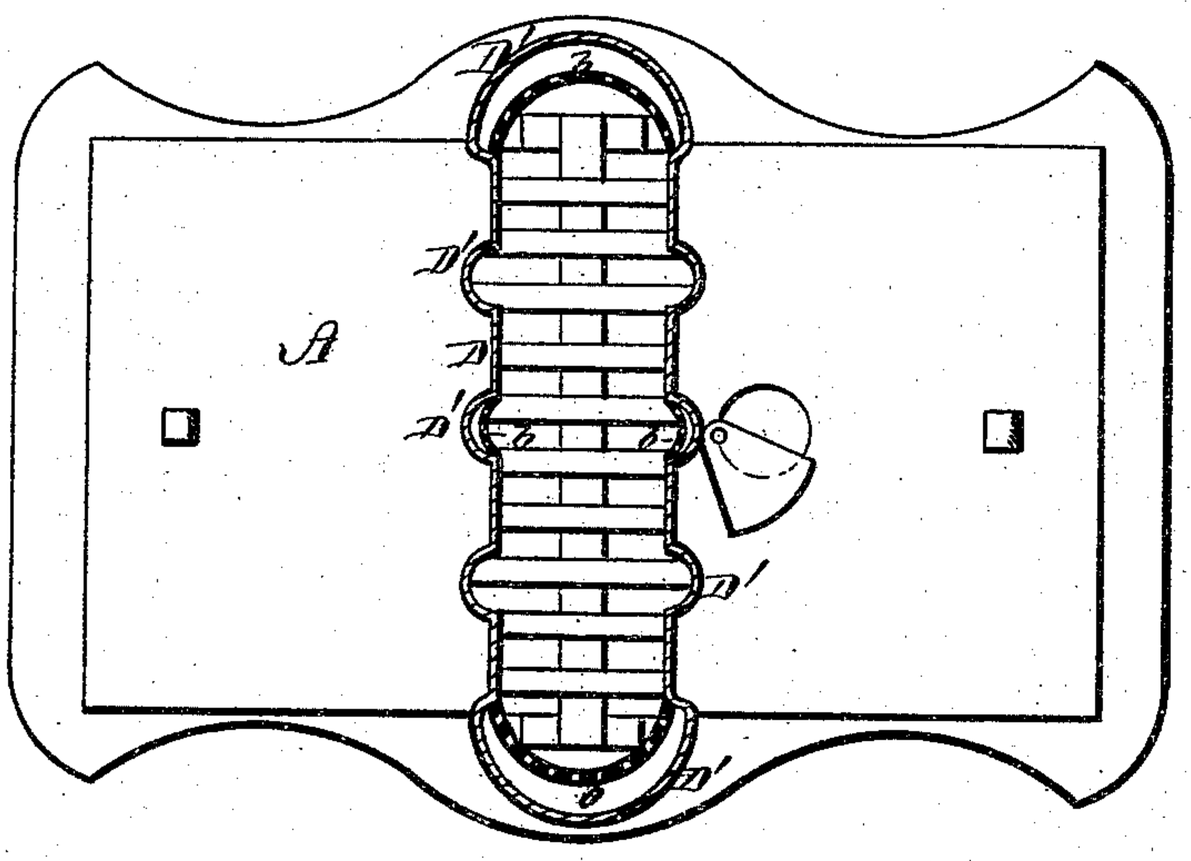
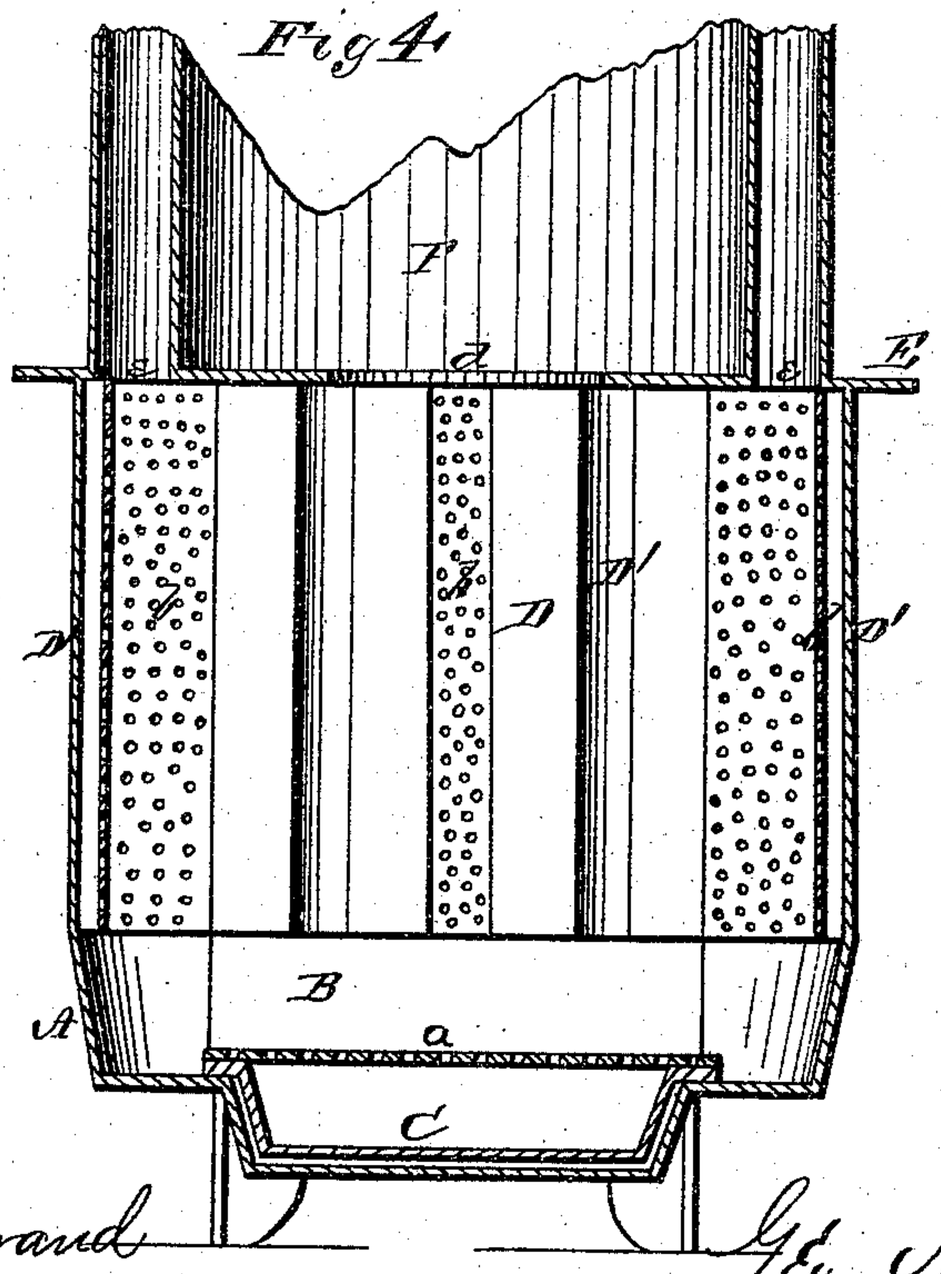


Fig 4.



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UNITED STATES PATENT OFFICE.

GEORGE NEWCOMER, OF BATTLE CREEK, MICHIGAN.

IMPROVEMENT IN STOVES.

Specification forming part of Letters Patent No. **172,276**, dated January 18, 1876; application filed July 10, 1875.

To all whom it may concern:

Be it known that I, GEORGE NEWCOMER, of Battle Creek, in the county of Calhoun and in the State of Michigan, have invented certain new and useful Improvements in Stoves and other Heaters; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

Figure 1 is a perspective view of my stove. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a horizontal section of the stove, and Fig. 4 is an enlarged vertical section of the lower part thereof.

The nature and object of my improvement are to provide a stove, grate, furnace, or other generator of heat, whether for cooking or generating heat in boilers, or for any mechanical purpose, whereby the evaporation of water and its conversion into its constituent gases within the stove or other heater, or in conjunction with a fire, may be made to partially or entirely support the combustion of the fuel, without depending wholly upon the use of the atmosphere surrounding the heater or room, thereby saving the heated air near the fire, which is usually lost by being drawn through the fire. It is well known that about one-fifth only of such air supports combustion, while four-fifths (the nitrogen) serves only to absorb the heat and carry it off in the draft, thus giving the heat in the fire only one-fifth the time to radiate were there no nitrogen to contend with.

When using the oxygen and hydrogen of the water, which is converted into said gases at a temperature of less than 600° Fahrenheit, the oxygen supports combustion and the hydrogen burns, thus preventing the necessity of bringing into the room the cold air from without to supply the place of the warm air constantly flowing into the fire, four-fifths of which goes off as waste heat. It is also well known that when free vapor of water is subjected to a degree something less than six hundred it will readily burn and create the most intense heat.

My invention further consists in the construction of devices that shall avoid most of the loss of heat usually sustained by its being carried off through large pipes and flues without being held to or near extensive radiating-surfaces, thus losing more than seven-eighths of the heat usually generated, because of the excessive draft caused by the excess of nitrogen of the air and large hollow outlets for the rising products of combustion. To this end I provide a double hearth, A, and ash-pit B, constructed so as to be a suitable receptacle around or near the fire, to receive the dropping ashes and coal, and a good supply of water, the vapor and gases of the latter supporting combustion. The double hearths are made available to support vessels for culinary purposes, set against the side of the stove or the fire-magazine, as well as for heating sad-irons, and, by using the reflectors over the hearths, for roasting, baking, and cooking, using vessels having flat sides fitted to the magazine. C is the water-pan in the double hearth, over which is a perforated plate, *a*. The magazine D is made oval in cross-section, with semicircular columns D′ at the ends and sides. These columns are provided with perforated movable plates *b*, placed or attached on the inside, so as to leave a small space for the rising draft, when fine coal, or slack, is placed upon the burning coal, forcing the escaping gases generated between the fire and slack through the perforated plates into the flues D′, thus enabling us to burn the waste slack to a great advantage, by keeping down the heat under the slack, forcing a greater degree of heat into the room by direct radiation from the magazine. E is the cover to the magazine, constructed with flue-holes *e e*, and a suitable opening, *d*, to feed the fire by means of a movable magazine to hold the coal, or otherwise, and also for frying and cooking when desired, using suitable fixtures. The cover E has projecting sides to form a hearth to support the semicircular crest-drum or heater F. The projecting side plates of the cover also serve as reflectors of the radiated heat, and as deflectors to the heated rising air of the fire-box. The crest-radiator F is constructed in crescent form, so as to give the greatest possible radiating-surface to the ascending heat with the least possible space inside, confining the rising heat directly to its

sides, giving the heat the greatest facility to radiate. In the top center of the radiator F is a hole to set in a vessel, with a deep sink projecting down to hold and heat water for various purposes, and giving off more heat than the upper surface alone would on which the vessel rests. The heat and smoke in said radiator are made either to enter in at the lower ends and pass of near the top center, or enter at the lower end and middle and pass off at the top ends, thus forcing the rising heat in either case to pass over all its walls to the greatest advantage for heating rooms.

In order to perfect this crest-radiator its top is entirely covered with a suitable plate, H, so as to form a shelf to set things on, and to deflect and reflect the rising heat out into the room, and also to form a bake-oven when a tin reflector is placed in its front, extending to the top shelf-plate H. This cover is provided with collars to support the top horizontal deflecting-drum I, resting upon four small columns or pipes, G G, two of which serve as flues from the crest-drum F to the horizontal drum I, upon which, near the center, the usual exit-pipe J is placed. In connection with said drum I is placed a curved sink, K, the bottom of which does not reach to the under plate of the said deflecting top drum, but a flange, *x*, on the inner circle of the curved sink extends to the bottom. The object of this sink and flange is to serve as a guard, reaching the bottom of the drum, so that all the smoke must pass around it, heating its bottom and both sides, and get all the heat into the room radiated from its inner surfaces, while the smoke is being made to pass around it, forcing the smoke at the same time to the outer surfaces of the top drum I. The sink and its flange also serve as a guard, against which the soot dropping from the stove-pipe may be shoveled up and removed through the opening *h* in front of the pipe. The sink is further used to hold water for moistening or tempering the air of the room, and is made in two or more compartments, as shown, one or more of which may be used, as desired. It is covered with a perforated lid, N, through which the heated air or vapor may rise freely. The opening *h* may also be used for a water-vase or an ornamental top or lid. The top plate of the stove is provided with holes and lids for cleaning the flues or columns G.

The great object of this improvement is to provide a heater for burning the gases of decomposed water, drawing into the room no cold air, using less draft by dispensing with the nitrogen of the air, not carrying off the heat so rapidly, but giving it, at least, three times more time to radiate than when the air of the room is used instead of the hydrogen and oxygen of the water; and to provide, further, against large open spaces in the fire-chamber and radiating-drums; and to furnish each part or story of the heater, whether one or many, with deflecting projections to send the heated air down and outward to produce a more even temperature in all parts of the room, since, when no cold air is being drawn in, the heated air will naturally equalize itself in all parts of the room, and even the adjoining rooms become tempered and warm. By this construction I also provide the heater with the most practicable, compact, and convenient form, giving the least internal area and the greatest radiating-surface, with reflecting and deflecting projections to more perfectly equalize the heat over the room and floor, instead of allowing it to rise, as usual, directly to the ceiling. I also use the least possible draft of air from the room, and utilize the waste heat from dropping ashes and coal, and the outward and downward rays from the fire-grate in producing vapor to support the needed combustion of the fire, thus generating and saving the most heat at the least possible expense.

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

1. The fire-chamber D, provided with the flues D′, having interior perforated plates *b*, substantially as and for the purposes herein set forth.

2. The combination of the fire-chamber D, having flues D′, with interior perforated plates *b*, the top plate E, and crescent-shaped radiator F, substantially as and for the purposes herein set forth.

3. The horizontal deflecting and radiating top drum I, provided with the interior curved sink K, having projecting flange *x*, substantially as and for the purposes herein set forth.

4. The combination of the hearth A, fire-chamber D, radiator F, plates E H, flues or columns G, and top drum I, with sink K, all constructed substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of May, A. D. 1875.

GEORGE NEWCOMER.

Witnesses:
FOSTER M. METCALF,
EDWARD FRENCH.