

S. S. UTTER.  
Heating-Stoves.

No. 131,314.

Patented Sep. 10, 1872.

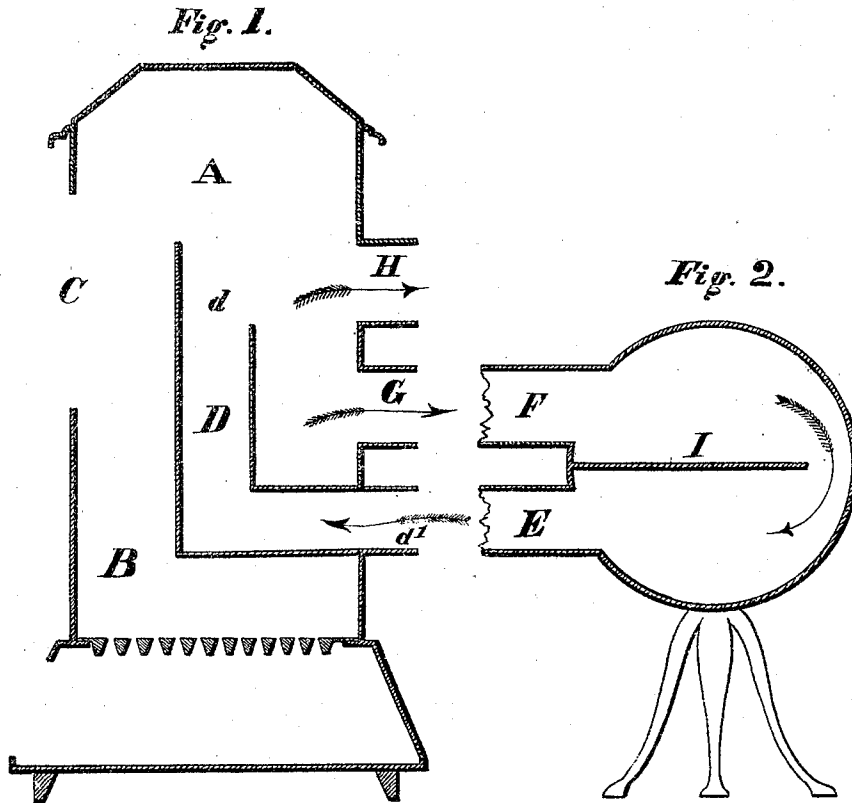
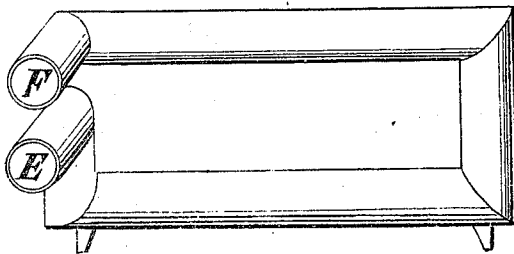


Fig. 3.



WITNESSES

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# UNITED STATES PATENT OFFICE.

SAMUEL S. UTTER, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. 131,314, dated September 10, 1872.

### SPECIFICATION.

*To all whom it may concern:*

Be it known that I, SAMUEL S. UTTER, of the city of Brooklyn, county of Kings, and State of New York, have invented an Improvement in Apparatus for Conveying Heat through Radiators, adapted to be used with stoves, ranges, and other heaters; and I do hereby declare that the following is a full, clear, and exact description of its mode and manner of operation, reference being had to the accompanying drawing and to the letters of reference marked thereon and making a part of this specification.

In stoves as heretofore constructed a large portion of the heat has been lost by being carried off through the smoke-pipe, and when the radiating surface has been enlarged by means of apparatus to convey and utilize some of the heat away from the stove itself, it has generally been done by means of an indirect draft. The objection to this is that some of the gases incident to combustion escape from the stove, and that heat cannot be conveyed in this manner to but a short distance from the stove.

My invention has for its object the construction of an improved apparatus for conveying heat from the stove.

Figures 1 and 2 are vertical sectional views of a stove and radiator containing my improvements. Fig. 3 is a radiator in the form of pipes or tubes, being another application of my improvements.

A is the case of a stove; B, the fire-pot; C, the door; D, a rarefying-chamber; *d*, the upper or discharging end thereof; *d'*, the receiving end. E is a radiating-conduit for conveying the heat from the radiating apparatus into the rarefying-chamber. F is a like conduit for conveying the heat from the stove, through the vent G, into the radiating apparatus. H is the smoke-pipe.

Fig. 2 is a radiator, showing one application of my improvements. It may be placed at a distance from the stove in the same room and the room thus more thoroughly heated, or it may be placed in an adjoining room and two rooms heated by one fire. Thus a large store-room may be heated by the stove, while the radiator could be placed in an office. The hot gases from the fire pass into this radiator through the conduit F, and, after passing

through it, escape, through E, into the rarefying-chamber D, and thence into the smoke-pipe. This radiator need not be of the form shown, but may be of any shape desired. I is a partition which may be arranged in this radiator to force the hot gases to pass completely around within the same.

Fig. 3 is a radiator composed of pipes or tubes, which may be of any desired length, (experiment having shown that heat can be conveyed by my improvement to a distance of thirty feet,) which pipes may be of any form or shape to suit the place to be heated. This form of radiator is especially convenient for heating passages, cars, &c. The hot gases pass into these pipes through the conduit F, and, after passing through them, escape into the rarefying-chamber D, through the conduit E.

These two apparatus are given as examples of the application of my improvement. The hot gases may, in like manner, be carried around ovens, or any other desired apparatus, which may be placed in any position most appropriate for the purpose for which used, and connected with conduit-pipes E and F.

Heat cannot be conveyed by any method heretofore known, through radiating conduits or pipes, with any useful radiating power, to a greater distance than from between five to ten feet from the fire on a level with the stove; but by the use of my improvement I have been able to convey heat to a distance of more than thirty feet from the stove on the level, and even below the level, of the stove, with radiating power in the conduits and apparatus connected therewith sufficient for all practical heating purposes. It will be seen that by arranging radiators in proper shape and position cars, halls, &c., can be heated to great advantage by my improvement.

My invention consists in placing within a stove, range, fire-place, or other heater a rarefying-chamber, D, so arranged that the receiving end *d'* thereof passes out of the stove or other heater, to allow its being connected with suitable conduits, and the discharging-end *d* opens within the stove. This chamber is placed in such position that it may be heated by the fire. At the end *d'* of this chamber is connected one end of a conduit-pipe, E, through which the hot gases pass from the radiating appa-

ratus into this chamber, and thence out through the smoke-pipe H. This rarefying-chamber need not be in the position indicated, nor of the form shown in the drawing, but gives the best result when so constructed as to have the greatest extent of heating-surface exposed to the fire. By means of the vent G the hot gases utilized pass, through the radiating-conduit F, into the radiating apparatus that may be connected therewith, whence they pass through E and D, as before described. This vent need not be in the part of the stove shown in the drawing, but may be in any other part of the stove above the fire-pot, when the radiator used could be more conveniently connected with the stove by thus changing its position, or when, for any other reason, it is desirable to change it.

The manner of operation is as follows: The air and gases in the chamber D are rarefied by the heat of the fire in the stove, and pass out through the discharging-end *d'*. A vacuum is thus created in the apparatus connected with the chamber D by means of the conduit E, which is supplied by the hot gases drawn through the vent G into the conduit F.

When the heating apparatus is attached permanently to the stove suitable openings should be provided therein for the purposes of cleaning the same, when it is removable, as it may be cleaned without much more trouble than an ordinary stove-pipe. When it is desired to use the stove without any radiator, an ordinary cap may be placed upon the vent G.

I am aware that heat has been conveyed to different parts of stoves by means of flues, pipes, or chambers of various kinds; and I do not desire to claim in this patent any apparatus by which the stove itself can be made a better radiator; but

What I do claim is—

A radiator, with conduits F and E, into and through which hot gases pass from a stove or other heater, in combination with a rarefying-chamber, D, and vent G in such stove or heater, substantially as described, and for the purposes set forth.

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Witnesses:

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