

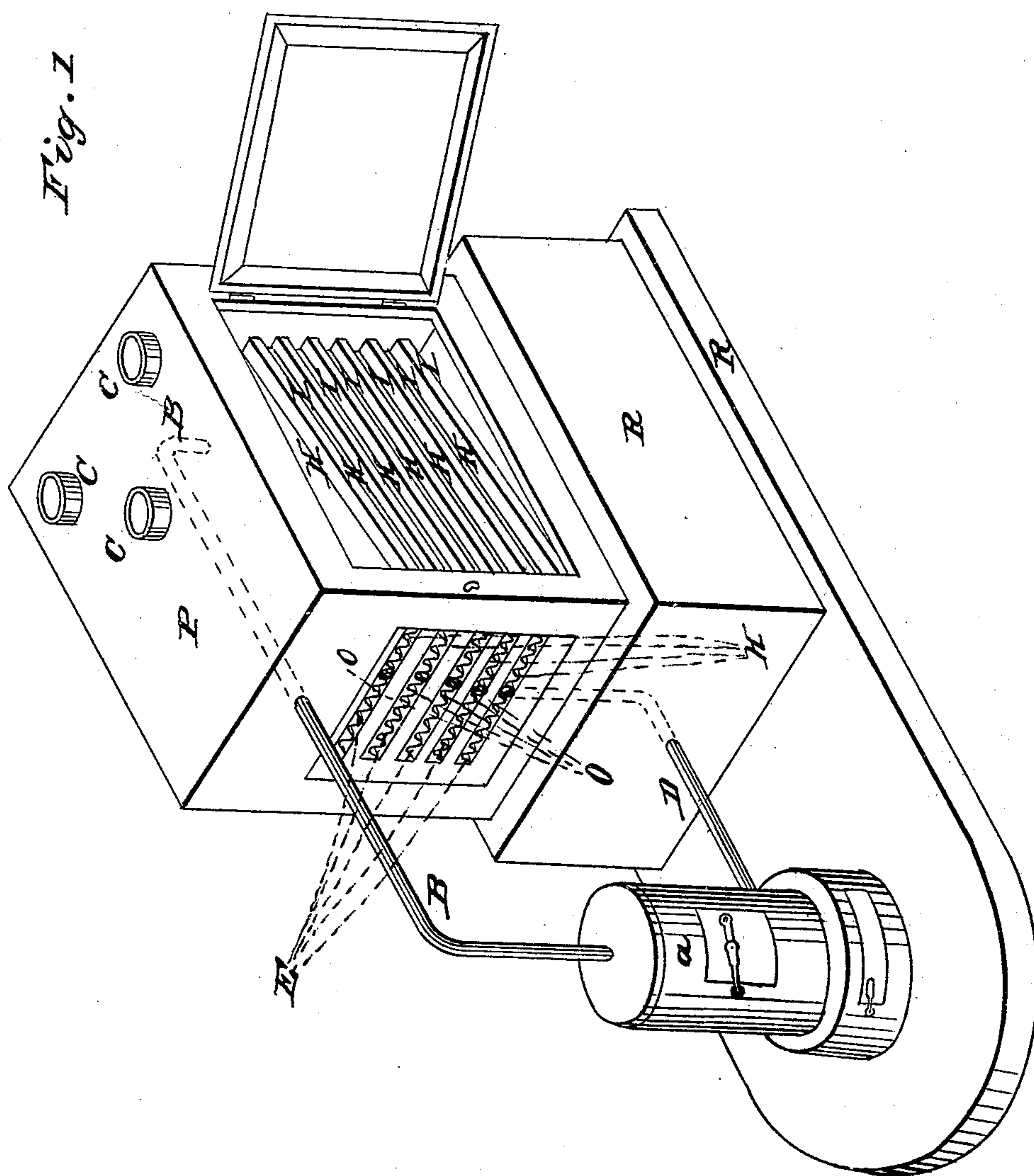
C. A. DICKERMAN.

2 Sheets—Sheet 1.

Steam Heater.

No. 20,939.

Patented July 20, 1858.

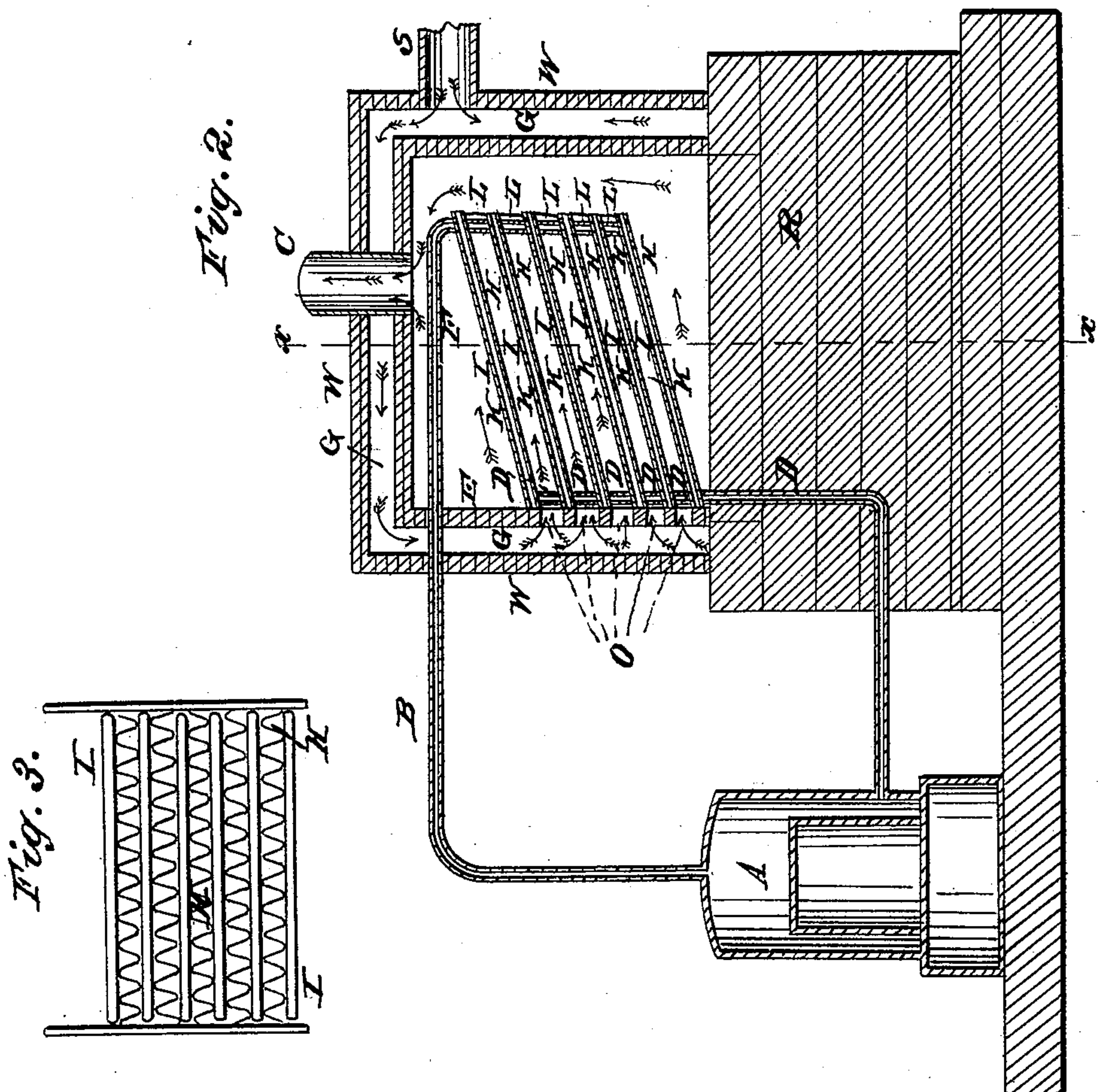


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UNITED STATES PATENT OFFICE.

CHAUNCEY A. DICKERMAN, OF NEW HAVEN, CONNECTICUT.

STEAM-HEATER.

Specification of Letters Patent No. 20,939, dated July 20, 1858.

To all whom it may concern:

Be it known that I, CHAUNCEY A. DICKERMAN, of New Haven, in the county of New Haven, State of Connecticut, have invented
5 a new and Improved Mode of Heating Buildings by Steam; and I do hereby declare that the following is a full and exact description thereof.

The accompanying drawings exhibit a
10 section of the whole apparatus.

I build the hot air chamber F of brick or other suitable material, or I form the hot air chamber, F, by building the wall, E, of brick or other suitable material. I build the
15 wall, W, outside of the wall, E, leaving the space between, which forms the cold air chamber, G. I place in the hot air chamber, F, the steam radiators, I, I, I, I, I, I. These I make of iron or other suitable material. They are made thin with the plates
20 forming the steam chambers not more than one fourth of an inch apart in order to obtain a great amount of radiating surface heated with a small amount of steam, thus
25 rapidly condensing the steam taking the heat therefrom and returning the water of the condensed steam to the boiler to be again turned to steam and heated as before. I place these radiators, I, as shown by the
30 drawings, in the hot air chambers, F. I place the lower ends of the radiators tight against the end wall, E, of the hot air chamber F. I also build the side wall of the hot air chamber tight against the edges of
35 the radiators so that little or no air can pass up between the edges of the radiators and the side walls. As I cannot well letter the side walls I have thus described them. The radiators, I, I, &c., are placed in a horizontal
40 position in one direction and somewhat inclined in the other as shown by the drawings. The upper end of the radiators are some ten or twelve inches from the end wall, E, of the hot air chamber, F, that the air may pass
45 freely upward as will be described hereafter. I place between the steam radiators, I, I, thin metallic plates H, H, H, these running from one radiator to another, form apertures through which the air to be heated passes;
50 and is heated in a cheap and efficient manner. In one end wall of the hot air chamber (the end wall is marked, E,) I make apertures, O, O, O, O, O. These apertures are narrow and as long as the width of the
55 radiators, I, I, I, thus allowing the air to pass freely up between the radiators, I, I, I,

&c., and the thin metallic plates, H, H, H, through the apertures or flues K, K, K, formed by the radiators, I, I, I, and the thin metallic plates H, H, H, as shown by
60 the drawings. These zigzag plates H, are best seen in Fig. 3, which exhibits a vertical cross section of heating flues I, and air flues K, through line *x, x*, of Fig. 1, and at right
65 angles to the direction of tube B. They are also seen in Fig. 1. Fig. 3 also shows the form of the flattened flues I, &c., when looked into in the direction of the flow of the current of steam. I connect the radiators at
70 the lower end by pipes or flues D, D, D, D, D, and at the upper end by pipe or flues L, L, L, L, L.

The steam from the boiler A, enters the radiators, I, I, I, &c., by the pipe, B, and
75 pipes L, L, L, L, L, (as shown by the red darts in the drawings) thus filling the radiators with steam by openings from B into I, I, I, I, I, I, and discharge by D, &c. The air to be heated and sent into the apartments
80 comes from the outside through the cold air box, S, into the cold air chamber, G, surrounding the walls, E, E, of hot air chamber, F and filling the cold air chamber, G. The air passes through the apertures, O, O,
85 O, O, O, above described, in the end wall of the hot air chamber, and as shown on the drawings by the black darts, and is heated, as above described, by coming in close contact with the above described radiators, I,
90 I, I, and the thin metallic plates H, H, H, as seen on the drawings. The heated air then passes upward through the hot air chamber, F, into the hot air pipe, C, thence to the apartments to be warmed.

The cold air passing from the cold air
95 chamber, G, comes in contact with the radiators, I, I, I, and the thin metallic plates, H, H, H, thereby condensing the steam and taking the heat therefrom. The water of the condensed steam then passes from the
100 radiators, I, I, I, I, through the pipes D, D, D, D, D, as indicated by the black darts in the drawings, to the boiler A, to be again converted into steam, and give out its heat
105 again, as described above.

I sometimes modify the direction of the steam current through the steam flues, I, by sending it directly from the boiler into the lower ends of flues I, by passages D, D, D, &c., provision being also made for the in-
110 closed air to escape from the radiators; and the steam-supply pipe should in that case be

sufficiently large to return the condensed water to the top of the boiler by its own gravity and also furnish abundance of steam to the heating-flues I; but, although I have
5 used the above modification I still prefer the other arrangement as being the most effective and economical on the whole and the one here claimed.

I claim—

10 The arrangement of the chest of steam heating flues I, I, I, I, I, I, mutually parallel, and inclined as described, in combina-

tion with similarly inclined and parallel air flues K, heated thereby; both the steam and the air having passed once through the
15 flue or passage across the chest, are at once discharged to its final destination in the manner and for the purpose set forth.

CHAUNCEY A. DICKERMAN.

Witnesses:

N. A. COWDREY,
BENJAMIN A. TUTTLE,
CHARLES K. WILLIAMS.