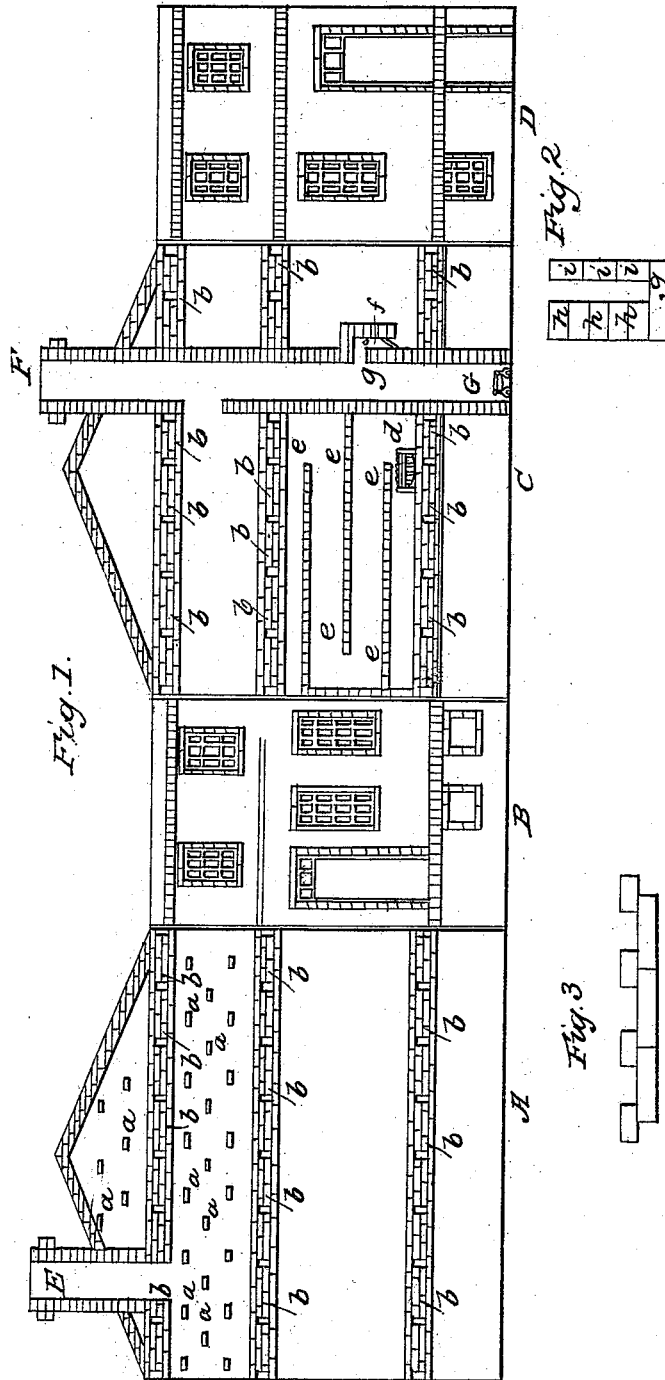


J. A. STEWART.

House Chimney.

No. 1,639.

Patented June 17, 1840.



UNITED STATES PATENT OFFICE.

JOHN A. STEWART, OF PHILADELPHIA COUNTY, PENNSYLVANIA.

MODE OF WARMING BUILDINGS BY CONVERTING HOLLOW WALLS INTO FLUES.

Specification of Letters Patent No. 1,639, dated June 17, 1840.

To all whom it may concern:

Be it known that I, JOHN A. STEWART, of the county of Philadelphia, in the State of Pennsylvania, have invented an improvement in the manner of building houses of brick, by which improvement I dispense with chimneys as ordinarily constructed, causing the draft from the fires to pass through spaces formed in hollow walls, whereby a large portion of the heat which is lost by the direct passing of the draft up the chimneys is saved, it being made to heat the walls and is thereby conducted and radiated into the apartments, said spaces constituting what I denominate "radiating-flues;" and I do hereby declare that the following is a full and exact description thereof.

Figure 1 in the accompanying drawing represents the four walls of a building shown as opened out, so as to display them all in one plane.

The sections A and C show the two side walls, and B and D, the back and front walls. The whole of these walls are supposed to be built double, a space being left throughout the greater part of the building between the exterior and interior portions of each wall, which space is to constitute my radiating flues. As represented in the drawing, the inner portion of each wall is supposed to be removed, and the space between that and the exterior portion exposed to view.

In the section A, the small rectangles *a*, *a*, represent headers, being those bricks which are used to bind the two portions of the wall together; such headers are employed throughout, but are omitted in the other parts of the drawing, as not necessary to be shown. Around the window and door casings heading courses are to be laid inclosing them entirely, and binding the two portions of the wall together. In the side walls A, and C, the openings *b*, *b*, *b*, are spaces for the ends of the joist; above and below these spaces, two or three heading courses are to be laid. The front and back walls, in general, not being entered by joists there will, in them, be an unobstructed course for the heated gases to pass, which should it be desired to allow the gases to pass up between the joist, spaces may be left for that purpose, and these may be increased to any desired size by uniting two

or more joists by trimmers in the ordinary way known to builders.

Instead of leaving the space between the walls to constitute my radiating flues, by the introduction of separate headers, I sometimes bind the two portions together so as to constitute flues in which the draft may be carried several times back and forth as shown in the section C, where *c*, *c*, *c*, are such flues, formed by headers placed close to each other.

d, represents the place of a grate, or stove, and *e*, *e*, *e*, the continuous rows of headers, dividing the flues from each other.

E, and F, are two chimneys, built at top in the ordinary way. Into these chimneys, or into the flues formed by the hollow walls, there is an opening or throat from each fire place, which may be governed by a damper. When it is desired, as in summer, to allow of a direct passage of the heated air to the top of the chimney the arrangement to effect this object may be made in the following way. Let G be a fire place in the basement or other convenient part of the building, which fire place may be directly under the chimney F. All the openings from the hollow walls into this chimney may be closed by registers, or sliding shutters, constructed for that purpose in erecting the building, and so arranged as that, when desired, the direct course of the draft may be cut off, and the radiating flues brought into action, such registers, or dampers being such as are in common use. Pipes from stoves may be introduced whenever they are desired. One is shown as introduced at *f*, where by the employment of a register *g*, *g*, above and below it, the gases may be made to pass directly into a chimney or be carried between the double walls. The shading will serve to exhibit the course of the draft along the radiating flues. It is desirable that the front and back walls should be fourteen inches, leaving a space of four and a half inches throughout between the two portions. In laying nine inch walls, as the side walls, for instance, the bricks may be most conveniently laid in the manner shown in Fig. 2, where *g'*, is a header, *h*, *h*, *h*, five courses of bricks laid flatwise, and *i*, *i*, three courses laid edgewise, which last should form the interior wall; this number will rise to the same level, leaving a flue space of nearly two and a half inches. The headers used to

bind the two walls may be laid is in Fig. 3, so as to leave spaces between them, which, upon the walls will be filled in with bats. Where there are partition walls they may be
5 built in the same way, or flues of four inches and a half may be left in a nine inch partition by placing the bricks at both ends of the headers edgewise, as at *i, i, i*, in Fig. 2.

10 I am aware that double walls, resembling those described by me have been heretofore constructed for the purpose of protecting the interior wall from the effects of moisture, and also with a view to obviate, in some de-
15 gree, the effect of change of temperature, a stratum of air being thereby interposed between the outer and inner portions; I do not therefore make any claim to a structure of this kind so far as it is adapted and ap-
20 plied to the purposes above mentioned, but

What I do claim as constituting my invention, and desire to secure by Letters Patent, is—

The formation of the spaces between such

double walls into flues, in such a manner 25 as that the draft from fire places or stoves of any kind may be made to pass between said walls, in the manner described, whereby they will be kept perfectly dry, and a large portion of the heat usually lost, will
30 be conducted and radiated into the rooms; the whole being constructed and operating substantially as herein set forth.

It will be manifest that such flues are particularly adapted to, and are intended 35 for, buildings heated by anthracite, coke, or other fuel giving out but little smoke and I will also observe that it is my intention to place ventilators in my walls in such a manner as to admit of free flux of air between 40 them, whenever this may be deemed desirable, said ventilators being closed at pleasure.

JOHN A. STEWART.

Witnesses:

EDW. D. CARFIELD,
WM. SANDERSON.