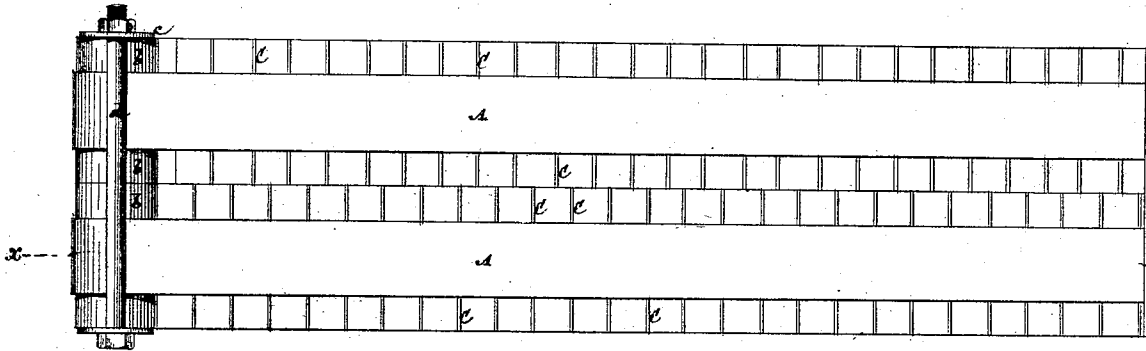


G. W. BLAKE.  
Steam Radiator.

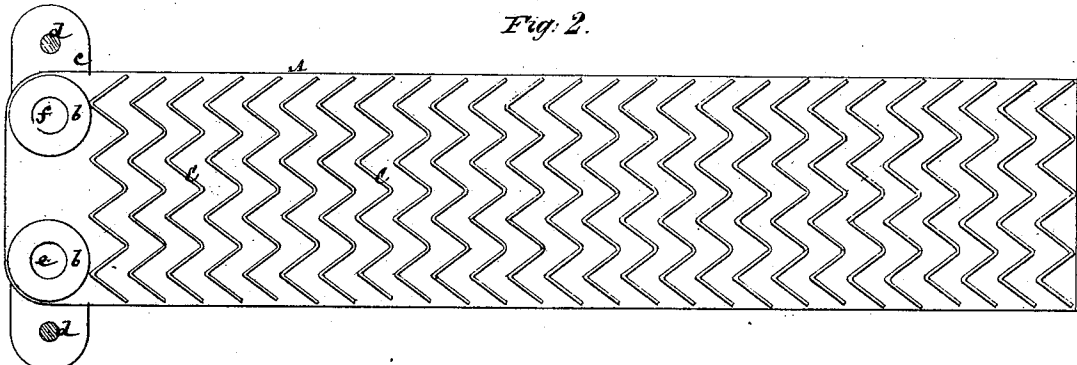
No. 111,721.

Patented Feb. 14, 1871.

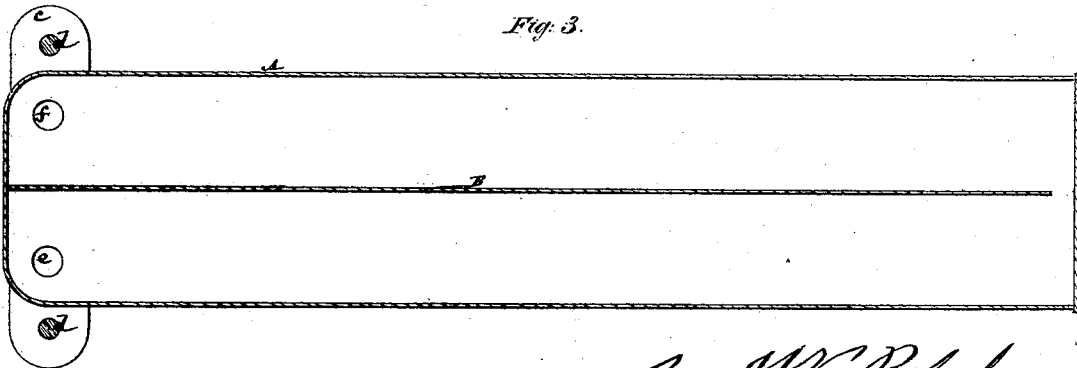
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Geo. W. Blake*

*Witnesses:*  
*Fred. Haynes*  
*R. W. Hubert*

# UNITED STATES PATENT OFFICE.

GEORGE W. BLAKE, OF NEW YORK, N. Y.

## IMPROVEMENT IN STEAM-RADIATORS.

Specification forming part of Letters Patent No. **111,721**, dated February 14, 1871.

*To all whom it may concern:*

Be it known that I, GEORGE W. BLAKE, of the city, county, and State of New York, have invented a new and useful Improvement in Steam-Radiators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a plan of a steam-radiator, or sectional portion of the body of one, constructed in accordance with my improvement; Fig. 2, a side view of the same; and Fig. 3, a longitudinal section taken as indicated by the line *x x* in Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention relates to radiators for house-warming or other heating purposes, in which steam is made to circulate through the body of the heater, that is provided with radiating projections for heating air made to circulate up through the heater outside of the steam flues or passages; and the improvement consists in a novel combination and arrangement of steam-chambers, provided with return or division plates, inlets and outlets for the steam above and below, and in certain relative position to said return-plates, together with zigzag radiating projections on the sides of the steam-chamber, and arranged in pairs or sets so as to break joint, for the air to be heated to pass up between, the whole serving to form a most effective steam-radiator.

Referring to the accompanying drawing, A A represent the steam-chambers, which make up the body of the radiator, and of which there may be any desired number, arranged side by side, and, if required, mounted in sets one upon the other, the same being bound together at their one end by tubular projections *b*, constructed to establish communication between the adjacent chambers, rubber packings to make close such joint or joints, and clamping bars or plates *c*, united by cross-bolts *d*.

These steam-chambers, of which two only are here shown as arranged side by side, are divided longitudinally by return-plates B, made to stop short of the one end of each chamber, so that steam admitted by a lower side inlet, *e*, at the opposite end of the one chamber, and by the lower tubular connection, *b*, into the adjacent chamber, will be caused to circulate along said chambers under the return-plates B and back again over said plates, and out through an upper outlet, *f*.

The sides of these steam-chambers A A are provided externally with zigzag projections C C, which not only serve as radiating-surfaces, but also form flues of a tortuous character for the air to be heated to circulate up through or between, which arrangement, taken in connection with the return-passages for the steam within the chambers A A, secures a very perfect and economical action of the radiator, and this action is still further improved by arranging the adjacent zigzag projections C C of each pair of chambers to break joint, as represented in Fig. 1.

I am aware that steam-radiators have been constructed with a series of projections on the outer surface of the steam-flues, as in the Patent No. 36,000. These, therefore, I do not claim; but

What is here claimed, and desired to be secured by Letters Patent, is—

A steam-radiator constructed, substantially as described, of steam-chambers A A, division-plates B, arranged to form return-passages therein, inlets and outlets *e f*, and zigzag projections C C on the outsides of the chambers, and made to break joint as regards contiguous chambers, the whole being arranged for circulation of the steam and air, as specified.

GEO. W. BLAKE.

Witnesses:

FRED. HAYNES,  
R. E. RABEAU.