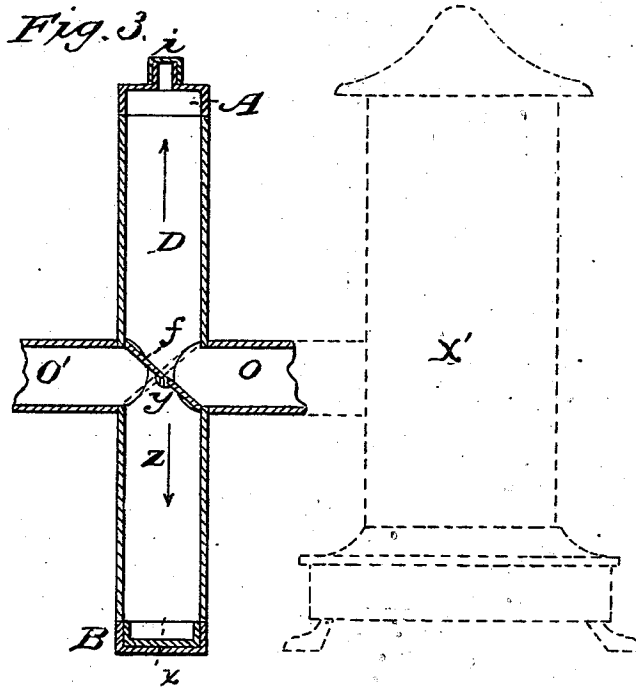
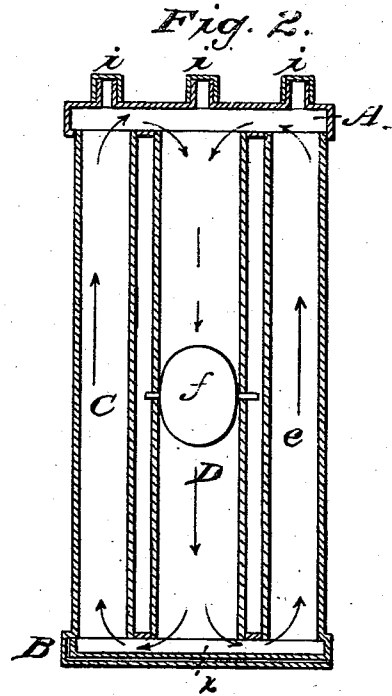
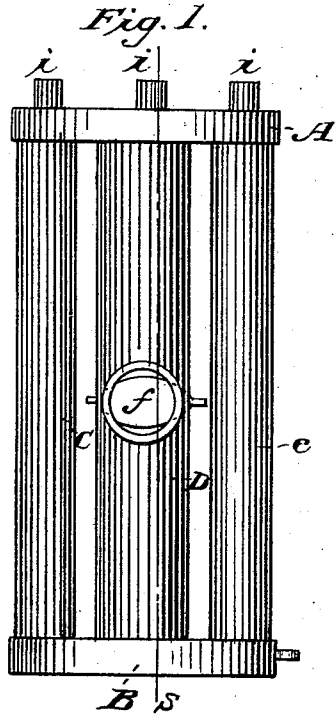


E. S. BLAKE.
Heat Radiator.

No. 84,989.

Patented Dec. 15, 1868.



WITNESSES.

*Amos A. Johnston
Henderson & Davis*

INVENTOR.

E. S. Blake

UNITED STATES PATENT OFFICE.

E. S. BLAKE, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN RADIATORS.

Specification forming part of Letters Patent No. **84,989**, dated December 15, 1868.

To all whom it may concern:

Be it known that I, EDWARD S. BLAKE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Radiators, being an improvement on the radiator for which Letters Patent were granted to me bearing date 30th day of October, 1866, and numbered 59,173; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the use of three hollow columns connected with an upper and lower chamber, and so arranged that the columns, chambers, and pipes connected therewith can be readily cleaned.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a front elevation of my improvement in radiators. Fig. 2 is a vertical section of the same. Fig. 3 is a vertical section of the radiator when cut through at line S of Fig. 1.

In the drawings, A represents the upper chamber, and B represents the lower chamber. These two chambers are connected together by means of three columns, C, D, and *e*. The column D is provided with pipes *o* and *o'* and a valve marked *f*. The upper chamber, A, is provided with three capped openings, *i*, which are arranged directly over the columns C, D, and *e* for the purpose of facilitating the cleaning out of the chamber A and the columns C, D, and *e*.

The lower chamber, B, is provided with a drawer for the purpose of receiving the dirt, soot, and other refuse of combustion.

As the construction and arrangement of my improvement in radiators will readily be seen and understood by reference to the accompanying drawings, and from the foregoing description, I will therefore proceed to describe its operation, which is as follows:

Having the radiator constructed of cast or sheet metal, or partly of cast and partly of sheet metal, with the several parts of the ra-

diator arranged substantially as represented in the accompanying drawings, I then attach the pipe *o* to a stove, as indicated by the dotted lines *x'*, and the pipe *o'* connected with the flue of a chimney. With the radiator thus connected to a stove, or connected in any other desired manner to a stove or other heating device, the valve *f* is then turned into the position represented in Fig. 3, or as indicated by the dotted lines marked *y* in Fig. 3. When the valve *f* is in the position represented in Fig. 3 the heat will pass up through the upper part of the column D, and pass to the right and left through the chamber A, and down through the columns C and *e* into the chamber B, and from it up through the lower part of the column D into the pipe *o'*, and from it into the chimney-flue; but when the valve is in the position represented by the dotted lines *y* in Fig. 3 the heat will pass down through the lower part of the column D, as indicated by the arrow marked 2, and through the chamber B and columns C and *e* and chamber A, and down through the upper part of the column D into the pipe *o'*, as indicated by the arrows in Fig. 2.

It will be observed that the heat and smoke may pass off direct from the stove through the pipes *o* and *o'*, when so desired. The radiator is cleaned out through the medium of the capped openings *i*, by means of a suitable scraper or other device, and the soot, dirt, and other refuse of combustion will drop down into the drawer *x* of the chamber B, from which it can be withdrawn at pleasure.

Having thus described the nature, construction, and operation of my improvement, what I claim as of my invention is—

1. The columns C, D, and *e*, combined with the chambers A and B, or their equivalent, constructed, arranged, and operating substantially as herein described, and for the purpose set forth.

2. The drawer *x*, when used in connection with heating-flues of stoves, substantially as herein described, and for the purpose set forth.

E. S. BLAKE.

Witnesses:

JAMES J. JOHNSTON,
A. C. JOHNSTON.