

J. SHACKLETON.

RADIATOR.

No. 185,582.

Patented Dec. 19, 1876.

Fig. 1.

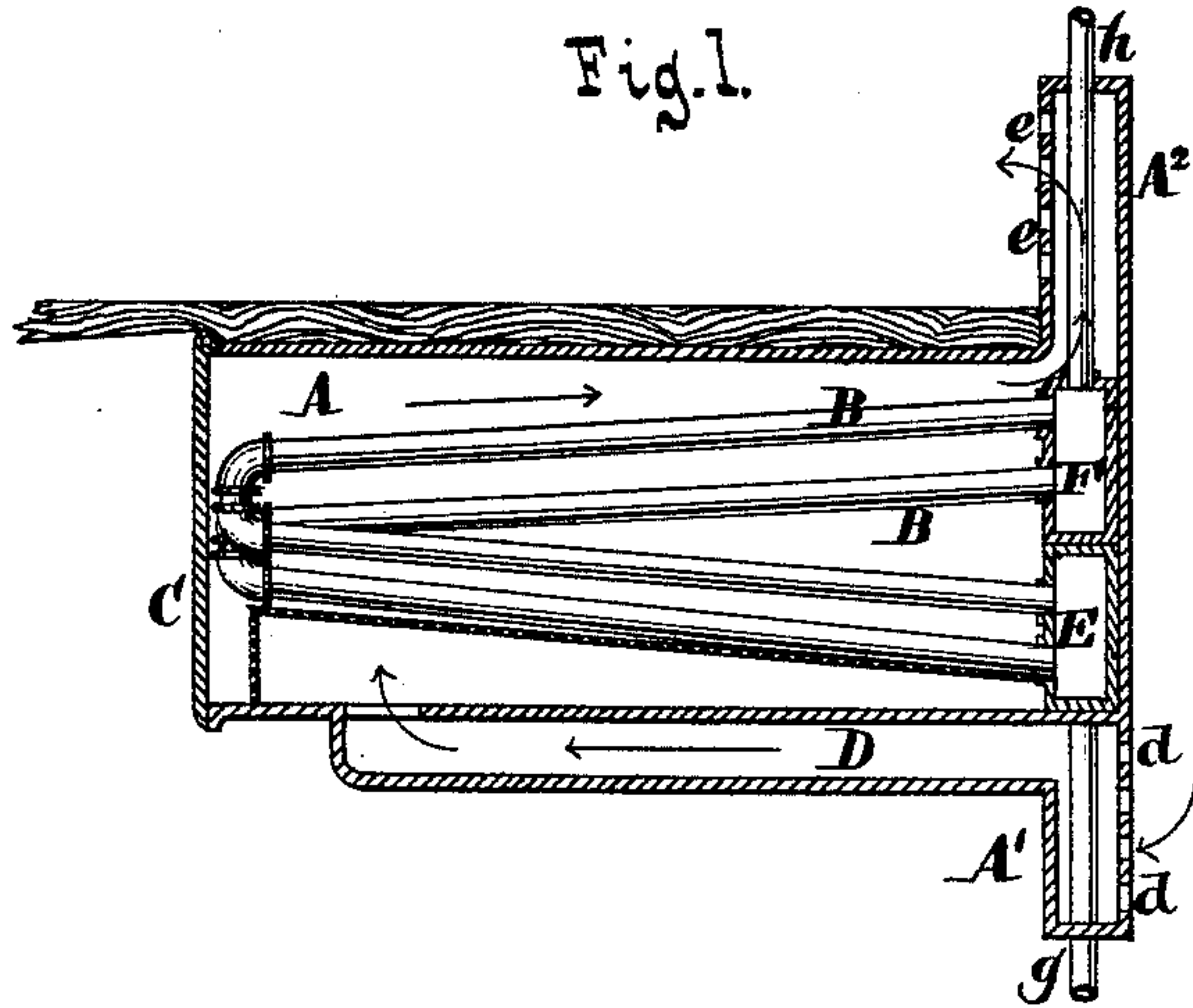
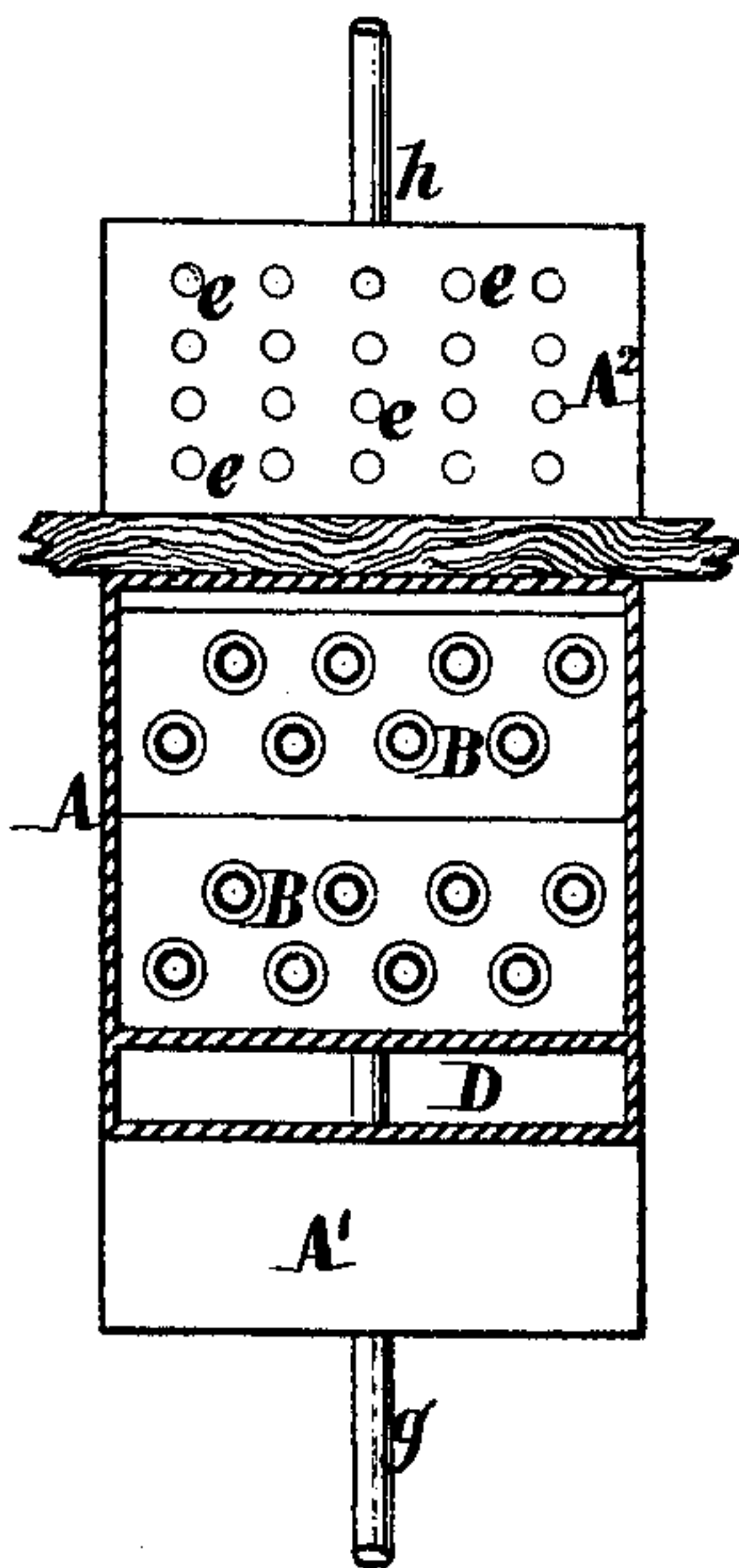


Fig. 2.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JOSEPH SHACKLETON, OF RAHWAY, NEW JERSEY.

## IMPROVEMENT IN RADIATORS.

Specification forming part of Letters Patent No. **185,582**, dated December 19, 1876; application filed June 5, 1876.

*To all whom it may concern:*

Be it known that I, JOSEPH SHACKLETON, of Rahway, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Radiators, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal vertical section of my improvement. Fig. 2, is a vertical cross-section thereof.

Similar letters indicate corresponding parts.

My invention consists in a radiator which is constructed of a box or jacket containing heating-pipes, and which is perforated in such parts thereof that when the said jacket is arranged in the wall of an apartment, the pure and cold air exterior to the said apartment is permitted to enter the jacket while it escapes therefrom into the apartment in a heated state. The heating-pipes are bent, and each communicates at one end with a feed-chamber, and at the other end with a discharge chamber, situated at one end of the box or jacket, so that a constant circulation may be kept up in the pipes.

In the drawing, the letter A designates the box or jacket of my radiator, and B B are heating-pipes arranged within it. The box or jacket A is provided with a door, C, at one end thereof, and at its other end with two branches, A<sup>1</sup> A<sup>2</sup>, which extend therefrom in opposite directions. These branches A<sup>1</sup> A<sup>2</sup> are each provided with holes or perforations *d e* in one of their sides, the holes *d* being formed in the outer side of the branch A<sup>1</sup>, while the holes *e* are formed in the inner side of the branch A<sup>2</sup>. The branch A<sup>2</sup> communicates directly with the interior of the box or jacket A, while the branch A<sup>1</sup> communicates therewith through a flue, D, the object of this flue being to conduct the air, which is permitted to enter through the perforations *d*, to the rear part of the jacket.

The heating-pipes B are bent in the form of a U, or nearly so, as shown, and they are each connected at one end to a chamber, E, and at the other end to a chamber, F. These chambers E F are situated at the outer end of the jacket A, and contiguous to the branches A<sup>1</sup> A<sup>2</sup>. Steam, or any other suitable heating medium, is admitted to the chamber E through a pipe, *g*. From the chamber E the steam circulates through the heating-pipes B, whence it discharges into the chamber F, and from this chamber it escapes by a pipe, *h*.

In putting up my radiator I arrange the body of the jacket A contiguous to the floor of an apartment, and place the branches A<sup>1</sup> A<sup>2</sup> in the wall of such apartment in such a manner that the perforations *d e*, respectively, face the opposite sides of the wall. The pure cold air exterior to the said wall is permitted to enter the jacket A through the perforations *d*, where it becomes heated, while it escapes into the apartment in its heated state through the perforations *e*, as indicated by arrows in Fig. 1.

What I claim as new, and desire to secure by Letters Patent, is—

A radiator composed of a box or jacket, A, having the branch A<sup>1</sup>, provided with perforation *d* on its outside, and the branch A<sup>2</sup>, provided with perforation *e* on its inside, plate, in combination with the heating-pipes B, the whole being adapted to operate substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 18th day of April, 1876.

JOSEPH SHACKLETON. [L. S.]

Witnesses:

W. HAUFF,  
CHAS. WAHLERS.