

E. A. ANDREWS.

Heating Stove.

No. 205.

Patented May 30, 1837.

Fig. 2

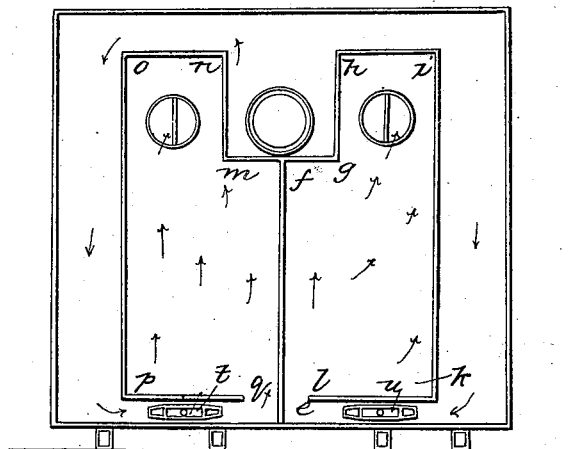


Fig. 1

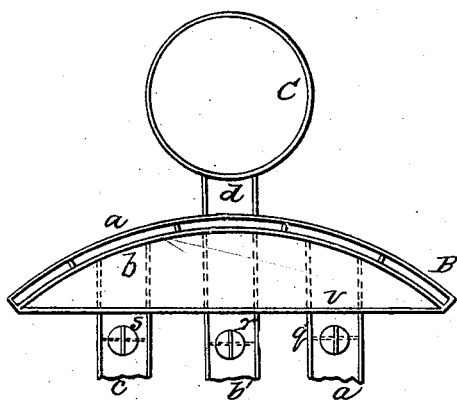
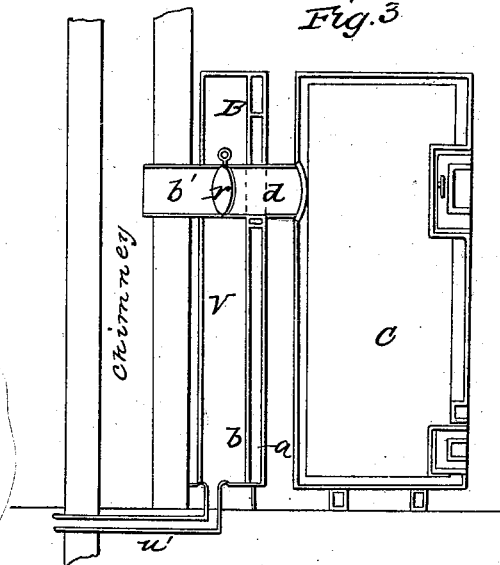


Fig. 3



Witnesses  
R. H. Eddy  
William Wiley

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# UNITED STATES PATENT OFFICE.

ETHAN A. ANDREWS, OF BOSTON, MASSACHUSETTS.

## STOVE-RADIATOR.

Specification of Letter's Patent No. 205, dated May 30, 1837.

*To all whom it may concern:*

Be it known that I, ETHAN A. ANDREWS, of Boston, in the county of Suffolk and State of Massachusetts, have invented, made, and applied to use new and useful Improvements in the Construction of Stoves.

The disposition, arrangement and use of the several parts of these improvements, the principle thereof, and the several modes in which I have contemplated the application of that principle or character by which it may be distinguished from other inventions, together with those parts, improvements or combinations I claim as my inventions and discoveries, I have fully set forth and described in the following specification and annexed drawings.

My invention or improvements consist in a part which I call the radiator, which is placed behind the stove and which may be attached to all kinds of stoves, whether close or open, whatever be the fuel used in them, provided the smoke and gases are carried from them by pipes.

Figure 1 represents a horizontal section of the stove C and radiator B. The radiator B consists of two plates of metal *a*, *b*, either curved or straight, placed at a small distance apart from each other, and united by a strip of metal, or in any other convenient manner at their edges. For burning anthracite coal, the space between the plates should be about one inch; but for wood, bituminous coal or peat, it must be greater, or about one and one half to two and a half inches, or of such distance apart as circumstances and convenience require.

Figs. 2 and 3 represent vertical sections of the radiator, it being made as close as possible, except openings for the pipes *a'*, *b'*, *c*. The interior of the radiator is separated by partitions *e f g h i k l*, and *e f m n o p q*, formed as seen in the drawings, or in any other convenient manner. The three pipes *a'*, *b'*, *c* proceed from the radiator into the chimney or flue, for the final passage of the smoke or gas. *d* is the neck of a stove *c*, communicating with the radiator. The pipe *b'* from the radiator is placed opposite the pipe *d*. When the damper or valve *r* is open, the gases pass directly through the same into the chimney. When the damper *r* is closed, the heated air, gas or smoke circulates around the partitions *f g h i k l* and *m n o p q* in the direction of the arrows (as seen in Fig. 2) escaping into the chimney through the pipes *a'* and *c*, whose dampers *q'* and *s* are supposed open. Small openings *t*, *u*, are made in the lower part of the

radiator for the purpose of removing any soot or ashes that may collect. These openings may be closed by a proper slide or hinge door. The heat of the gases or smoke which would otherwise pass off through the chimney, and be lost, is here imparted to the sides of the radiator, from which it is disseminated to the atmosphere of the apartment.

The back of the radiator is set at any convenient distance from the chimney; all that is necessary being a space sufficient to admit the dampers, and a free circulation of air between the back and side of the chimney. If it should be required to supply the room with external air, I attach to the back of the radiator a straight or curved plate of metal *v*, and also close it at the bottom by a plate of metal. Into the bottom I insert a pipe *u'* as seen in Fig. 3, which proceeds from the radiator to the outside of the building, communicating with the external air. As the air in the space between the plates *b* and *v* becomes rarefied by the heat of the radiator, it rises and gives place to the cold air, which rushes through the pipe *u'*, and thus a constant current of external air passes through the pipe *u'*, is heated by contact with the side of the radiator, and rises into the apartment. The outer surface or plate *a* of the radiator imparts heat to the air of the room also, and thus a great saving of heat is effected.

When the fire is first made in the stove, the smoke and volatile matter is suffered to pass through the pipe *b'* into the chimney or flue; but as soon as the coal has become sufficiently ignited, the damper *r* is closed and the dampers *q'*, *s* opened. The passage through the pipe *b'* being obstructed, the smoke or gases circulate through the radiator, and are discharged into the chimney through the pipes *a'* and *c*.

I claim as my invention—

1. The combination of the stove, radiator with its partitions and flues, air pipes *u'*, and other parts, to operate together.

2. And separately I claim the radiator, constructed in manner and for the purposes I have herein above described.

In testimony that the above is a true description of my said inventions and improvements, I have hereunto set my hand this tenth day of February, A. D. one thousand eight hundred and thirty seven.

ETHAN A. ANDREWS.

Witnesses:

R. H. EDDY,  
WILLIAM WILEY.