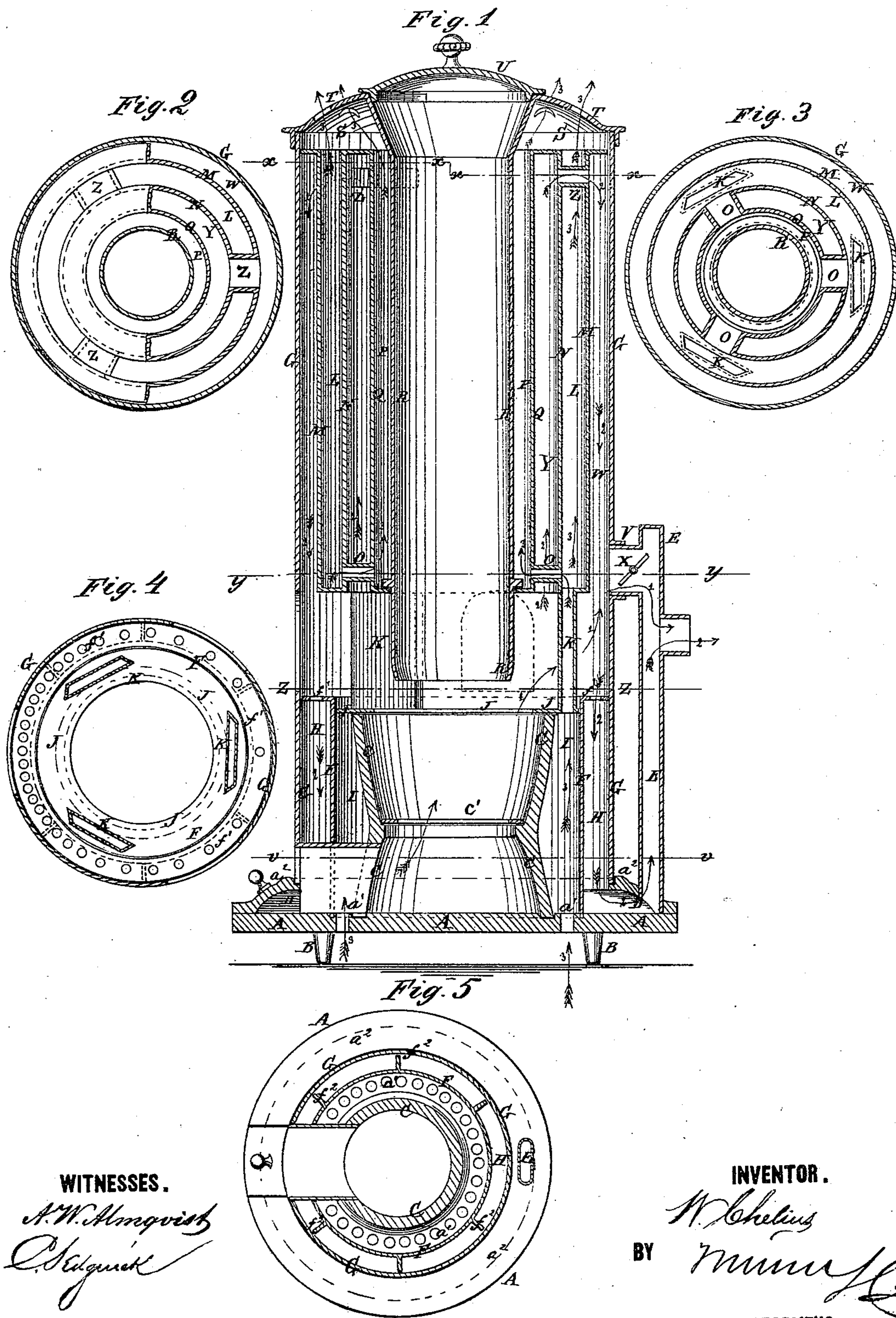


W. CHELIUS.  
Heating Stoves.

No. 148,668.

Patented March 17, 1874.



WITNESSES.

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WILLIAM CHELIUS, OF PATERSON, NEW JERSEY.

## IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. 148,668, dated March 17, 1874; application filed February 21, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM CHELIUS, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Heating-Stoves, of which the following is a specification:

Figure 1 is a vertical section of my improved stove. Fig. 2 is a cross-section of the same, taken through the line *x x x x*, Fig. 1. Fig. 3 is a cross-section of the same, taken through the line *y y*, Fig. 1. Fig. 4 is a cross-section of the same, taken through the line *z z*, Fig. 1. Fig. 5 is a cross-section of the same, taken through the line *v v*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved heating-stove, which shall be so constructed as to pass the air to be heated in thin sheets between two metallic surfaces, both of which are heated by the passage of the heated products of combustion, so that the air may be quickly heated, and so that all, or nearly all, the heat may be extracted from the products of combustion before they are allowed to pass off into the chimney. The invention consists in the combination of the perforated base, provided with a hollow flange or rim, the flanged cylinder, and the outer cylinder with the fire-pot, to form spaces for the induction of cold air and the eduction of the products of combustion; and in the combination of the five concentric cylinders, the perforated cover, the close cover, and the three sets of pipes with the fire-pot, the flanged cylinder, and the perforated and flanged base, as hereinafter fully described.

A is the base of the stove, which rests upon short legs B, in the ordinary manner, and upon which rests the lower edge of the fire-pot C. In the base A, around the lower edge of the fire-pot C, are formed numerous holes *a*<sup>1</sup>, through which the air to be heated passes. The base A is provided around its outer edge with an inwardly-projecting flange or rim, *a*<sup>2</sup>, the space or chamber D beneath which serves as a flue, to conduct the products of combustion to the pipe or flue E, through which they pass to the chimney. In the middle part of the fire-pot C is placed the grate *c*', thus forming an ash-pit in the lower part of said fire-pot. The fire-pot

C is surrounded by a cylinder, F, the lower edge of which rests upon the base A, around the circle of holes *a*<sup>1</sup>, and the upper end of which rises a little above the top of the fire-pot C, and has an outwardly-projecting flange, *f*', formed around its upper edge, and extending outward to the outer case or cylinder G, the lower end of which rests upon the rabbeted edge of the flange or rim *a*<sup>2</sup>. The flange *f*<sup>1</sup> has numerous holes formed through it, through which the products of combustion pass into the space H between the cylinders F and G to the flue D, and which are more numerous upon the forward part of the stove, to counteract the rearward projection of the products of combustion from the effect of the draft. The products of combustion are made to pass down vertically through the space H between the cylinders F and G by vertical flanges *f*<sup>2</sup> formed upon the cylinder F, projecting to the cylinder G, and extending down to the top of the flange *a*<sup>2</sup>. The top of the space I between the fire-pot C and the cylinder F, through which the cold air passes, is closed by a ring, J, which rests upon the upper edge of the fire-pot C, and has three or more holes formed in it for the passage of the air, and with which are connected the lower ends of the flattened pipes K, the upper ends of which are connected with the space L between the cylinders M and N.

As the air, now partially heated, enters the space L, it divides, part passing up through said space, and part passing through the short pipes O into the space P between the cylinder Q and the cylinder or coal-reservoir R. The air passes up through the spaces L and P in thin sheets, and is exposed upon both sides to a heated metallic surface, so as to be rapidly heated. The heated air passes from the spaces L and P into the space S beneath the ring-cover T, and escapes through holes in said cover into the room.

The cover T rests upon the upper edge of the outer case or cylinder G, and is connected with the upper edge of the reservoir or cylinder R, and helps support said reservoir. The lower end of the reservoir R projects into the fire-chamber nearly to the top of the fire-pot C, and is further supported by a flange formed upon it, and which rests upon the flange formed upon the lower end of the cylinder Q. The up-



per end of the reservoir R is closed with a closely-fitting cover, U. V is a short pipe, leading from the space W between the cylinders M and G, or from the upper part of the fire-chamber into the upper part of the flue E, and which is provided with a damper, X.

When the damper X is open, the products of combustion pass directly from the fire-chamber into the flue E, as indicated by arrows 1. When the damper X is closed, the products of combustion pass up through the space Y between the cylinders N and Q, through the short pipes Z, into the space W between the cylinders G and M, down through said space W into the space H, and passes thence through the flue or space D into the flue E.

The stove is designed to be provided with doors, in the ordinary way; and the cylinder G around the fire-chamber may be provided with openings, closed with mica plates, to allow the fire to be seen. The spaces W and Y are closed at their upper ends, and are open at their lower ends; and the spaces L and P are closed at their lower ends, and are open at their upper ends.

The direction of the cold air, as it passes through the various spaces and becomes heated, is indicated by arrows 3; and the direction of the products of combustion, when the damper X is closed, is indicated by arrows 2.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the perforated base A, provided with a hollow flange or rim,  $a^2$ , the flanged cylinder F  $f^1 f^2$ , and the outer cylinder G with the fire-pot C, to form spaces I and H O, for the induction of cold air and the eduction of the products of combustion, substantially as herein shown and described.

2. The combination of the five concentric cylinders R Q N M G, the perforated ring-cover T, the close cover U, and the pipes K O Z with the fire-pot C, the flanged cylinder F  $f^1 f^2$ , and the perforated and flanged base A, substantially as herein shown and described.

WILLIAM CHELIUS.

Witnesses:

JAMES T. GRAHAM,  
T. B. MOSHER.